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International
Marketing Information
Series



COMMERCIAL NEWS For the Foreign Service

March/April 1977

**Special Issue: U.S. Energy
Conservation Programs
and New Energy-Efficient
Products**



U.S. DEPARTMENT OF COMMERCE
Domestic & International Business Administration
Bureau of International Commerce

CNFS



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THE ENERGY SITUATION IN BRIEF. . .

- * COAL IS THE UNITED STATES' MOST ABUNDANT ENERGY RESOURCE, ALTHOUGH IT ACCOUNTS FOR LESS THAN 20 PERCENT OF THE TOTAL ENERGY CONSUMED
- * DOMESTIC OIL PRODUCTION REACHED AN ALL-TIME PEAK OF 9.6 MILLION BARRELS PER DAY IN 1970 AND HAS DECLINED; IMPORTS, ON THE OTHER HAND, HAVE RISEN TO 40 PERCENT OF OUR OIL CONSUMPTION, COSTING THE UNITED STATES SOME \$34 BILLION IN 1976
- * NATURAL GAS PRODUCTION HAS ALSO PEAKED, AND IS DECLINING; MOST OF THE DECLINE HAS BEEN IN INTERSTATE SALES, CAUSING CURRENT GAS CURTAILMENTS OF CRISIS PROPORTIONS IN THE MIDWEST AND OTHER AREAS OF THE COUNTRY
- * NUCLEAR POWER'S SHARE IN THE ELECTRIC POWER AREA HAS INCREASED, ALTHOUGH LENGTHY LICENSING AND SITING PROBLEMS HAVE SLOWED THE GROWTH; NUCLEAR PLANTS SUPPLY ABOUT 9 PERCENT OF ELECTRIC POWER
- * SOLAR, GEOTHERMAL AND OTHER SOURCES ARE GROWING BUT DO NOT CONTRIBUTE A SIGNIFICANT SHARE OF THE UNITED STATES ENERGY NEEDS

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This bimonthly publication is designed for American Embassies and Consulates overseas. It is not regularly available on a subscription or gratis basis to American or foreign businessmen. However, it can be reviewed in most overseas Commercial Libraries as well as in the various Commerce District Offices in the United States.

Editor: Constance L. White

INTRODUCTION

PRODUCTS MANUFACTURED BY U.S. INDUSTRY THAT IMPROVE ENERGY EFFICIENCY

A winter of extreme cold ushered in America's third century. Thousands were unemployed, hospitals bulged with patients, oil-laden tankers were stranded in frozen waterways, future food harvests were threatened and Florida's citrus belt was declared a disaster area. Arctic temperatures placed impossible demands on scarce natural gas supplies.

Two days after assuming office, President Carter acknowledged the energy shortage, the conservation of energy and its proper allocation in the United States.

"I can pledge that the government will use the full measure of its authority to respond forthrightly to minimize adverse effects of this situation," the new President said, promising to "put all the instrumentalities of government to work to alleviate this crisis." But the President warned that without "public conservation, there may not be enough energy to allocate."

It is clear that energy conservation -- industrial and public -- will play a vital role in any solution to our current energy problems and those in the years to come. And in this twilight of the petroleum and natural gas age, where industrialized and less developed nations alike are competing for increasingly scarce and costly fuels, energy conservation through the efficient use of energy is a global concern.

As higher fuel costs and diminished availability have made their impact, industry has turned increasingly to more efficient products and processes in conducting business. This issue of the Commercial News for the Foreign Service presents a variety of energy efficient products which grew out of this need to conserve. The initial investment in acquiring energy efficient equipment or products is normally offset quickly by savings in rising fuel costs and, in turn, increased profits.

By bringing new energy-efficient products to businesses around the world, America is not only meeting a growing market demand but is offering a positive approach to extending the world's dwindling energy resources.

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UNITED STATES DEPARTMENT OF COMMERCE
Domestic and International Business
Administration
Washington, D.C. 20230

ENERGY: AN INTERNATIONAL CONCERN

Mankind's need to use energy wisely and efficiently is not confined to a few nations; it is a worldwide challenge. This is the reason why the Office of International Marketing welcomed the unique opportunity to develop this special energy issue of the Commercial News for the Foreign Service with the cooperation of U.S. industry and energy experts within the United States Government.

Through the cooperative efforts of the State Department's worldwide Commercial Newsletter Service, more than 100,000 foreign government and industry officials will be learning about the availability of "energy efficient" products developed by U.S. manufacturers as well as some of the major energy conservation programs of the U.S. Government.

This special issue is an example of another important function of the Commercial News for the Foreign Service: worldwide dissemination of pertinent, timely information about new products and new ideas on subjects of special international significance.

It has been a pleasure to jointly participate in this important commercial effort with Commerce's Office of Energy Programs and the Energy Research and Development Administration. We hope this energy edition of the "Commercial News" will be of special interest and value not only to American Foreign Service posts throughout the world but also to the foreign business and professional engineering communities.

Richard Garnitz, Director
Office of International Marketing



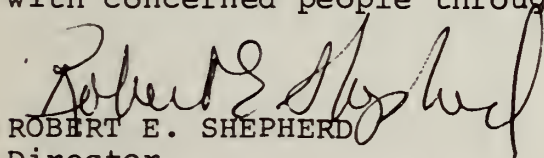
UNITED STATES DEPARTMENT OF COMMERCE
Office of Energy Programs
Washington, D.C. 20230

SHARING TECHNOLOGY TO CONSERVE ENERGY

The Office of Energy Programs has been very pleased to participate in the planning and preparation of this special energy edition of the Commercial News for the Foreign Service. It is significant that this is the first joint activity of the U.S. Energy Research and Development Administration and two units of the U.S. Department of Commerce -- the Office of Energy Programs and the Office of International Marketing.

American researchers and manufacturers are continuing to make significant advances in the development of new and more efficient energy technology and products. This publication is designed to introduce some of these new concepts and new products to overseas readers through the cooperation of the U.S. Foreign Service.

The conservation of energy is a challenge that has no national boundaries. We hope that this publication will succeed in its goal of sharing our new energy technology with concerned people throughout the world.



ROBERT E. SHEPHERD
Director
Office of Energy Programs

FEATURES

COMMERCE PROGRAMS HELP INDUSTRY REDUCE ENERGY CONSUMPTION

U.S. industries are making substantial gains in reducing energy consumption as a result of joint Government-private industry conservation programs.

The U.S. Department of Commerce, Office of Energy Programs (OEP), since its formation in 1973, has been actively working to develop a number of programs designed to increase the energy efficiency of the Nation's business sector.

OEP is involved in a number of programs in cooperation with the Federal Energy Administration, the Energy Research and Development Administration, other Federal, State and local agencies in addition to industrial and trade associations.

As the only Commerce agency solely concerned with energy, OEP helps coordinate energy activities and programs within the Department and provides assistance to the Secretary as Chairman of the Energy Resources Council (E.R.C.) in formulating energy policy and evaluating its impact on the business community.

OEP's energy conservation programs are based on the basic concept of good energy management which involves the following four points:

1. A basic commitment by top company management to provide the resources, both managerial and technical.
2. Conducting thorough energy audit of the company's energy consumption,
3. Setting tough, measurable conservation goals, and
4. Establishing an education campaign among employees and the community stressing the need to conserve energy.

One of OEP's most effective programs is its *Voluntary Industrial Energy Conservation Program* which is conducted in cooperation with the Federal Energy Administration and industry trade associations.

A total of 39 industry groups are now participating in the program and report regularly to Commerce on their progress in energy conservation and 40 others are working on development of conservation programs and reporting systems in preparation for participation in the program.

Basically, OEP meets with the industry trade associations and helps establish energy reduction goals and a reporting system so that industry-wide cumulative periodic progress reports can be made to OEP for further publication in Departmental semiannual reports.

The fourth semiannual report on voluntary industrial energy conservation, just recently released by OEP, shows a sustained and successful effort by the industry groups to cut energy consumption.

Some of the industries which have continued to show significant gains in energy efficiency as indicated in the recent progress report are petroleum refining, reporting a gain of 10.7 percent; textiles, whose energy efficiency improved 11.8 percent; flat glass manufacturers who reported an improvement of 19.8 percent and pressed and blown glass manufacturers whose energy efficiency increased 13.8 percent. Energy use efficiency is the change in energy use per unit of productive activity measured against a base period, usually 1972.

The Office of Energy Programs is continuing to work with additional industry groups to develop energy conservation programs and voluntary energy conservation reporting. The program is expected to gain added impetus as the industrial conservation program of the Energy Policy and Conservation Act of 1975 becomes effective this year, since that law provides for the exemption of companies from making individual mandatory reports to the government if they are full participants in an adequate voluntary program.

The Office of Energy Programs, in cooperation with the Department's Office of Field Operations, is also currently developing *a unique new program* to help small firms across the country establish effective energy management programs. The new program, "Energy Efficiency Sharing" (EES), basically is a business-to-business program that enables smaller companies to learn sound and proven energy management techniques from larger energy efficient companies located in their areas.

Here's how the program works: Companies with working energy management programs are asked by the Department of Commerce Office of Field Operations and Office of Energy Programs to host workshops for neighboring companies who have a need for information on energy management. Efforts also are usually made to involve State energy offices and Chambers of Commerce as co-sponsors of the workshops.

During the pilot phase of the program last fall, seven workshops were held in Iowa and Michigan, involving 78 companies in addition to the host companies. Since then, six more workshops have been held in New Jersey and two in Iowa where there are now ongoing EES programs under the State Energy Offices and with significant Commerce support.

Scheduled in early 1977 will be 27 more EES seminars developed by 11 field offices. The remainder of the 43 Commerce field offices and 20 satellite offices are currently negotiating with prospective host companies and other potential co-sponsors.

Among prominent corporations which have volunteered to host EES meetings are: General Electric, Texas Instruments, Rockwell International John Deere, Ralston Purina, Raytheon, American Can, Englehard Industries, Northwestern Bell, Hooker Chemicals, and Control Data. Many other organizations, large and small, have indicated interest in supporting the program and the Department's National Industrial Energy Council has endorsed the program.

At a typical meeting, engineers from the host company show how they analyzed their energy problems, how they made changes to increase energy efficiency, and how they saved money doing it.

The attending managers, engineers and financial officers from neighboring plants are encouraged to ask questions and relate their own problems. The hosts take their guests on a walk-through tour of the plant so that specific energy efficiency modifications can be seen and explained.

At each meeting, participants are strongly urged to meet again and on a continuing basis to have an ongoing exchange of information and assistance for the benefit of all.

Supporting these programs, as well, is a significant publications program dealing with both general and specific methods and techniques of energy conservation. One of these, the "Energy Conservation Program Guide for Industry and Commerce" (called EPIC) has proven to be of great assistance to thousands of companies throughout the country. Other publications based upon the principles of the EPIC publication are receiving equal acceptance.

A film, "Energy: Critical Choices Ahead", has received wide acclaim in the business community and has been purchased by many U.S. companies for showing to their employees and in their communities to encourage energy conservation through development of a clear understanding of the energy problem.

Another major program of the Office of Energy Programs is the development and analyses of overall energy projections and forecasts, both on the supply and the demand sides of the overall national problem. Specifically, in response to serious curtailments in delivery of natural gas, the Natural Gas Action Group was formed by the Office and has responded to specific requests for assistance from individual businesses and communities whose economies are being threatened by shortages of gas.

THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION'S
Division of Industrial Energy Conservation

Its Mission and Its Tactics

American industry accumulated its know-how during an era of cheap and abundant fuel. Coal was widely used and relatively inexpensive. Not for a hundred years would industry contend with the problems of pollution. The environment encouraged the use of coal, wherever possible, to hold down production costs.

If extra energy could offset the cost of raw materials, then extra energy was used. The conventional wisdom held that energy supplies were inexhaustible and need not be conserved. Although corporate decision-makers are gradually changing their priorities, industrial philosophy still mirrors an earlier era. Change demands immense capital outlays which entrench a reluctance to change. But encouraging such change is ERDA's Congressional mandate.

ERDA has two missions. One is to find and exploit new sources of energy. This issue of "CNFS" concerns itself with ERDA's other mission, that of energy conservation or the efficient use of scarce energy resources. It also has two goals. The first is to create, in partnership with industry, new energy-saving technologies that decision-makers will implement. The second is to substitute abundant fuels for scarce fuels wherever that proves practicable. An example: steam coal for natural gas in direct heat furnaces.

Conservation enjoys its current emphasis because it represents a quick, cheap way of combatting the energy shortage. Saving oil is cheaper than finding oil. Within the Division of Industrial Energy Conservation, an important ERDA component, professionals have identified processes and industries that can achieve significant energy savings.

The industrial sector consumes 42 percent of all energy consumed in America. Seventy percent of that cut goes to six energy-intensive industries. Approximately 90 percent is used by three basic industrial processes (direct heating, steam generation and electric drive). Yet only ten percent of industry's energy performs useful work. The balance is wasted in the form of slag, sludge, high-temperature exhaust gases and other effluents previously considered useless.

Having identified targets of opportunity, the Division of Industrial Energy Conservation pursues two tactics to minimize waste. In its *horizontal approach*, the Division works to improve processes common to many industries. If a process can be improved in one industry, cross fertilization is possible.

In its *vertical approach*, the Division examines specific industries that in themselves are energy intensive. It asks whether recyclables can be substituted for feedstocks, whether two processes can be merged to save energy and other utilitarian questions. Two examples illustrate the difference between the Division's horizontal and vertical approaches.

First, the horizontal. U.S. industry still lacks a precise, reliable air-fuel ratio meter. If a furnace is fed too much fuel and too little oxygen, fuel is wasted. If the furnace gets too much oxygen, then energy has again been wasted, first, in pre-heating the oxidizer, and, second, in venting its excess. A kind of complex, computerized industrial carburetor (an oversimplified analogy) could correct the mixture, not just in one specific furnace, but in melting pits, preheating, re-heating and forging operations as well. Recognizing an industry-wide need, ERDA negotiated a cost-sharing contract with industry to develop and demonstrate such a meter.

Second, the vertical. Agriculture and food processing is an energy-intensive industry, depending as it does on unique fertilizers, pesticides, harvesters, irrigation, processing, storage and transportation. The Division of Industrial Energy Conservation is examining the slaughtering/freezing process and identifying ways to save energy without compromising the taste and quality of animals being readied for the table. By deboning and butchering the meat prior to chilling, it appears energy could be saved during transportation, cold storage and distribution. In this case, a University was awarded a cost-sharing contract to develop and demonstrate new bovine deboning techniques with an energy-saving potential of 30 percent.

Whether traditional market forces will in the immediate future lower industry's energy consumption is at best a doubtful assumption. Relying for a century on cheap energy, companies use their research and development budgets to replace shopworn machinery and develop new markets. Their tendency is to introduce new technologies simultaneously, after years of testing. Underlying ERDA's cost-sharing research, development and demonstration (RD&D) contracts is a desire to change today's status quo, to emphasize the real value of energy.

Proof that industry is interested are 300-odd energy-saving proposals ERDA's Division of Industrial Energy Conservation receives each year. Before being accepted, each must satisfy "threshold criteria" employed by the division. In rough, skeletal outline, these criteria dictate among other things that a project have a high energy-saving potential.

The Division of Industrial Energy Conservation has negotiated, or is negotiating, 88 such contracts for Fiscal 1977. Each contract carries a quantified energy-saving potential. The sum of these potentials equals the Division's objectives, which outside analysts believe can be met. By 1980, the Division of Industrial Energy Conservation seeks to lower industrial oil and gas usage by at least two percent. By 1985, it seeks to lower usage by at least 22 percent. By the year 2000, it seeks a 40 percent lowering. Focusing on the economics, projections indicate the United States will be using some 98 quadrillion (quads) of British Thermal Units per year by 1985. To import one quad of energy costs \$2 billion--now!

An enormous quantity of sophisticated, highly technical data will be amassed under ERDA's cost-sharing contracts. So long as patent laws, licensing agreements, government regulations and U.S. policy constitute no barrier, the agency intends to share such information with U.S. and foreign manufacturers. The Division's Technology Transfer Branch is employing every tool available to ensure that innovations co-sponsored by the government are communicated to interested industry parties.

How to reach a target audience varies from industry to industry. A highly centralized industry, such as aluminum, can be briefed from top to bottom by four or five companies. But the textile industry encompasses some 2,500 plants many highly specialized. If the trade press can be interested in an article, the textile men will read it. So too will they digest bulletins from the American Textile Manufacturers Institute, just as steel executives pay attention to the American Iron and Steel Institute and farmers to the Agriculture Extension Service of the State Land Grant Colleges.

Almost daily meetings, joint ERDA-Commerce industry exhibits, workshops, booklets, summaries and reports help generate new proposals and ideas for improving the efficiency of energy use in industry, which may or may not lead to contracts. But more than 100 did last year.

On an international scale ERDA envisions the transfer of technology taking place through a two-way conduit, with other Nations receiving and furnishing data. Even though ERDA did not exist prior to January 19, 1975, such exchanges have begun to occur. Professional ERDA staff members play leadership roles in such organizations as the International Energy Agency, the Organization for Economic Cooperation and Development and the NATO Committee on Challenges in a Modern Society. ERDA scientists contribute to, and are receiving contributions from, many such multi-national organizations. When international treaties and agreements are negotiated, ERDA experts frequently serve as on-scene advisors.

The agency welcomes your suggestions. None will be ignored.

EVALUATION OF ENERGY-RELATED INVENTIONS

George P. Lewett

Chief, Office of Energy-Related Inventions/NBS

Introduction. On December 31, 1974, Congress passed the Federal Non-nuclear Energy Research and Development Act of 1974. This Act established a national program to develop new energy sources and the more efficient use of existing energy sources. The responsibility for carrying out this program was assigned to the Energy Research and Development Administration (ERDA).

In Section 14 of the Act, the Department of Commerce's National Bureau of Standards (NBS) was assigned the role of evaluating energy-related inventions and identifying those that may be suitable for potential ERDA support. In assigning the evaluation role to NBS, Congress noted that significant inventions frequently come from individual inventors or from small companies. There was concern that, in the competition for Government funds to be dispensed by ERDA, the individual inventor and small company might be at a disadvantage. NBS was directed, therefore, to pay particular attention to evaluation of inventions submitted by individual inventors and by small companies.

On passage of the Act, NBS began receiving requests for evaluation of inventions. By the time the NBS Office of Energy-Related Inventions (OERI) was established in April 1975 to carry out the evaluation program, more than 100 requests were awaiting evaluation. To date, OERI has received approximately 4,000 requests and completed evaluation of almost 3,000.

In this article, we will describe the evaluation process designed and implemented by OERI, report evaluation statistics and results, and comment on the impact of the OERI operation on the stimulation of innovation in energy technology.

Objectives and Scope. Evaluation is performed principally as a service to ERDA. The objective of the NBS effort is to identify those inventions which may be appropriate for possible ERDA support. The nature and extent of support, if any, to be provided is determined by ERDA after NBS recommends the invention to ERDA.

The NBS evaluation is restricted to review of the invention disclosure and data submitted by the inventor; it does not include testing. Evaluation requests may be submitted by anyone including citizens of other countries, however, the disclosure must be in the English language. No models are accepted. There is no fee or charge for the evaluation and the proprietary rights of the inventor are not compromised in any way.

The Basic Evaluation Process. The first significant action, after an invention disclosure is received and acknowledged, is referred to as disclosure review and analysis. In this step, the submission is reviewed for appropriateness under Section 14 of the Act. The disclosure is then designated as "ready for evaluation" or "unacceptable." In some cases, additional information may be requested from the submitter.

The disclosure is unacceptable if it is not energy-related; if it is nuclear in nature; if it is obviously scientifically flawed (e.g., perpetual motion); unclear or incomplete; or if it does not contain sufficient technical detail or depth to enable a determination to be made of its feasibility. Suggestions submitted by the general public tend to fall into the last category.

Acceptable invention disclosures are passed through a technical screen referred to as "first-stage evaluation." At least two engineers or scientists review the disclosure independently and sequentially, comment briefly, and make a positive or negative recommendation. Evaluators at this stage are instructed to spend between one-half to eight hours (average one hour) in reviewing the invention and to prepare a one-page, informal technical opinion. The opinions are used as inputs in the OERI-decision process and are not released outside of OERI. The principal purpose of first-stage evaluation is to identify inventions with "promise" rather than to document why the invention will not work or in what way it is deficient.

If during first-stage evaluation an invention is identified as "promising" or a decision has not been reached, an in-depth "second-stage evaluation" is conducted. At this point, an assumption is made that the invention is likely to be recommended for support. Thus the development of a data and information package suitable for ERDA support is emphasized. Evaluators are instructed to contact the inventor if additional information is needed and to spend up to eight man-weeks in the evaluation effort. If the results of the second-stage evaluation are negative, the evaluation report is forwarded to the inventor.

Evaluators and Decision Making. In evaluation three basic questions are asked: (1) Will the invention operate as the inventor claims? (2) Will it save energy or increase the available supply of energy if utilized? (3) Given that the invention has the potential to save energy, what are the chances that this potential can be realized? In other words, is development and transfer to the marketplace economically and practically feasible?

OFFICE OF ENERGY - RELATED INVENTIONS (OERI)

The basic evaluation process, after initial disclosure review and analysis, is iterative and may draw on a variety of evaluation sources, as depicted in Figure 1. While the typical cycle may consist of two first-stage reviews and a second-stage evaluation, the actual cycle is determined by the OERI senior staff. Further, once an invention is designated for second-stage evaluation, the invention is assigned to an OERI staff evaluator. From that point, the evaluator is responsible for insuring that the invention is thoroughly and effectively evaluated. If the invention is recommended to ERDA, the evaluator is also responsible for monitoring ERDA action and reporting on the results of the recommendation.

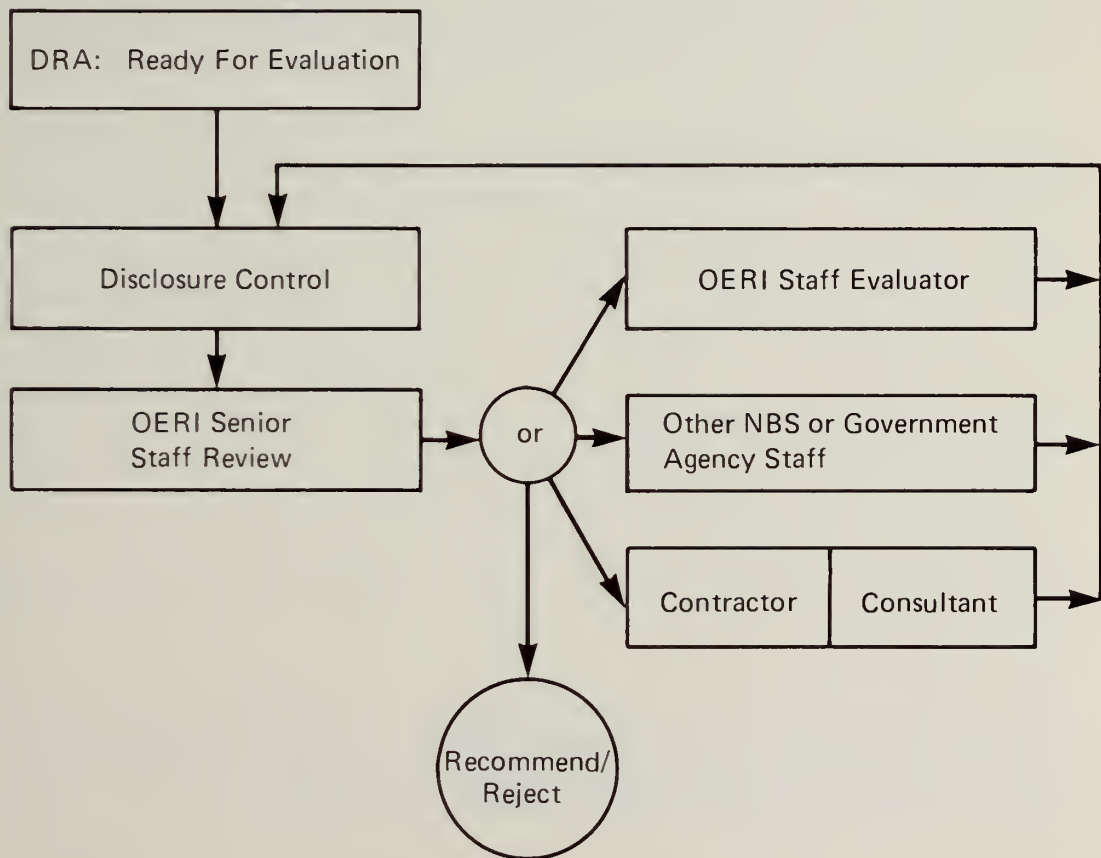


Figure 1

Characteristics of the Evaluation Process. As required by the Act, particular attention in the evaluation process is given to the needs, problems, and characteristics of individual inventors and small business. Paper work is minimized with invention disclosures accepted in the form most convenient for the inventor; there are no rigid format requirements. The form (NBS-1019) the inventor uses to request an evaluation asks mainly for the inventor's signature and for information identifying the invention. Only one copy of the disclosure has to be submitted.

Emphasis is placed on safeguarding the inventor's proprietary rights. A rigorous security system has been established. Government personnel and contractors are held formally accountable for each disclosure handled. Accessibility to disclosures is restricted and closely controlled.

A positive attitude is taken in favor of the inventor. The first review of the disclosure is basically nontechnical. The intent is to prepare a disclosure package insuring that the invention receives maximum consideration and that every submission, regardless of outward appearance, receives at least one thorough reading and review. Care is also taken to protect the individual and the small business during the dissemination of evaluation results.

Other Process Design Considerations. Experience of other invention programs indicates that of all inventions submitted, only a small percentage will be found to have significant value. The yield will vary according to the background of the people submitting the inventions. If the general public is involved, the yield may be less than .1%. If the input is restricted to a select technical population (e.g., university professors) the yield may be as much as 6%.

Thus, a multi-stage screening and evaluation process was developed based on a greater expenditure of resources on promising inventions. Initial stages in the evaluation process are focused on economically identifying those inventions with promise.

Accuracy in evaluation is stressed. The process cannot afford to miss a valuable invention. If it has to err, we wish it to be more likely to err in the direction of calling a poor invention good, rather than the reverse.

Performance and yield are carefully documented since the value of the program may be questioned. Performance is being so documented as to facilitate identifying actions which can be taken to increase the yield and thus improve the value of the program.

Experience to Date. Figure 2 charts the flow of inventions as of November 30, 1976. As shown on the chart, the expected yield is approximately 2%; this seems higher than expected. As the product of the three component percentages shown on the chart, however, this 2% figure has been fairly consistent month-to-month.

For over 80% of the inventions submitted to OERI, a patent application has been filed or a patent granted. Of the total inventions submitted for evaluation, approximately 30% are already on the market or ready for marketing; for 55% of the inventions, funds are being requested for prototype development; the remaining 15% are conceptual in nature requiring principally research and development effort.

The subject matter of the inventions ranges from new internal combustion engine designs, to new structural materials, to industrial chemical process improvements. More than 50% of the inventions address energy conservation activities with automotive improvements leading the submissions. About 20% of the submissions fall into the solar energy area.

Stimulation of Energy-Related Invention and Technology Transfer. The 2% yield from the evaluation process is a good measure of the innovative ability and innovation output quality of a large and definable technical population. A principal future thrust will be to determine, and possibly implement, actions which could be taken to increase this yield without lowering the standards of acceptability. Such actions could include: effort to increase participation by proven capable inventors and innovative companies; consultation and other assistance to selected participants to improve disclosure or idea development; publication of material which will guide qualified program participants in selecting promising areas for invention; appropriate training and education of selected program participants to increase their inventive skills and capabilities.

A valid measure of the performance of an operating process is essential if the process is to be made to change in a favorable way. The statistics being developed by the evaluation program will provide this measure for the process of technological innovation, and should lead to direct and favorable stimulation of innovation.

Availability of an evaluation by NBS can also be an aid and a principal first step in the transfer of new energy technology to the marketplace. Although the NBS program is constituted principally as a service to ERDA, it is likely that in many areas, a favorable NBS evaluation of an invention will enable an inventor to obtain necessary support in the private sector, even if public support does not materialize.

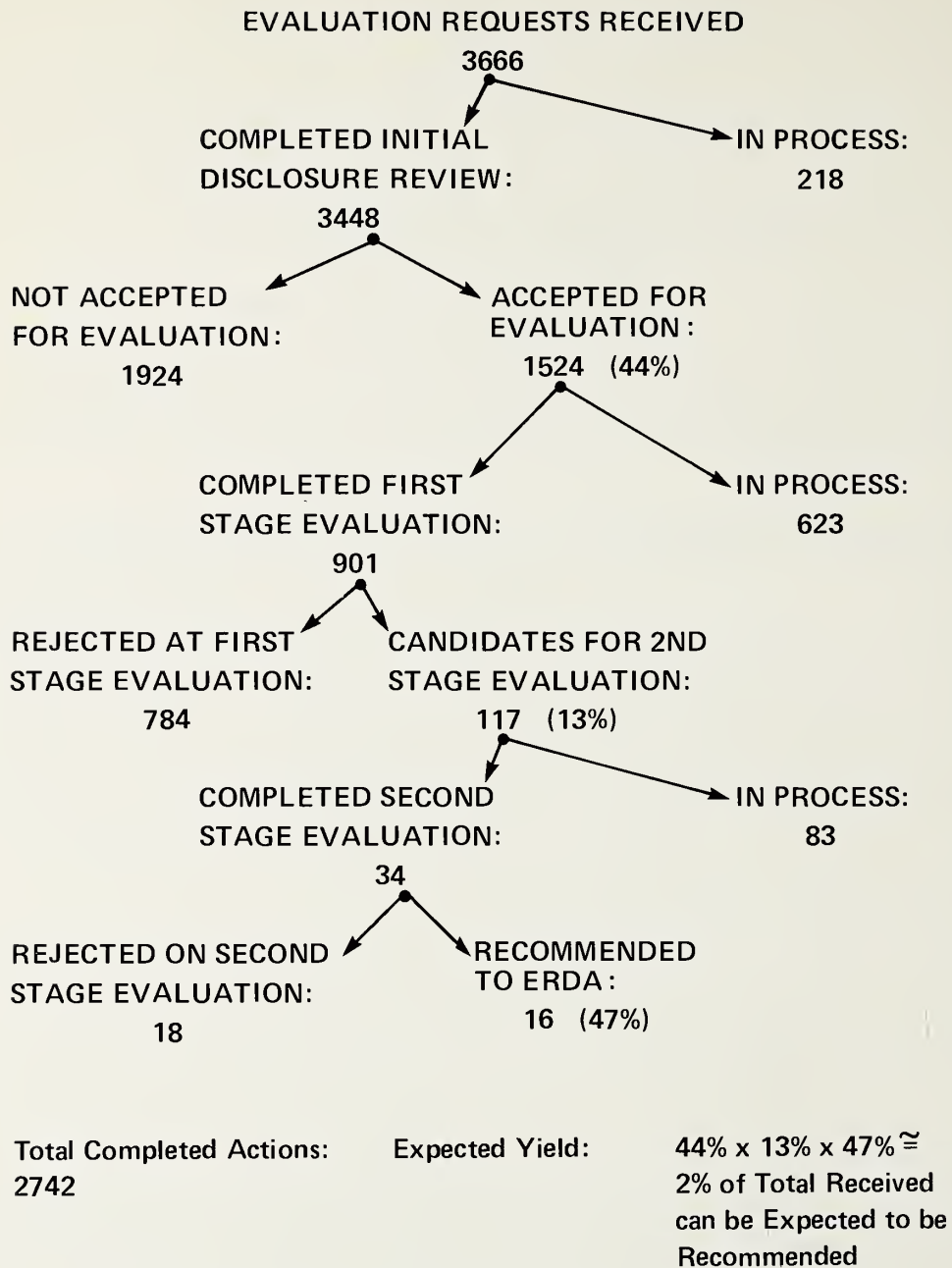


Figure 2. NBS Evaluation Process Statistics
As of November 30, 1976

MAJOR PRODUCT EXHIBITIONS IN THE U.S.

Selected U.S. Industrial Trade Shows Important for Energy Conservation and Energy Efficiency

<u>SHOW</u>	<u>LOCATION</u>	<u>DATE - 1977</u>
Electro'77	New York, N. Y.	April 19-21
Electrical Vehicle Show & Exposition	Chicago, Ill.	April 26-29
International Solar/ Energy Conference and Exhibit	Palm Springs, Calif.	April 30 - May 4
Design Engineering Show & Conference	Chicago, Ill.	May 9-12
National Plant Engineering & Maintenance Show	Chicago, Ill.	May 9-12
Society of Petroleum Engineers (AIME) Offshore Technology Conference	Houston, Texas	May 2-5
Instrument Society of America (ISA) Conference and Exhibit	Anaheim, California	May 2-5
Feed Industries Show	Minneapolis, Minn.	May 22-25
*Apartment Builder/ Developer Show	Las Vegas, Nevada	May 23-25
Western Packaging Show	Anaheim, California	July 19-21
Western Electronic Show and Convention (WESCON)	San Francisco, Calif.	September 20-23
Iron/Steel Show and Convention	Cleveland, Ohio	September 26-29
Baking Industry Expos.	Atlantic City, N.J.	October 8-13

* U.S. Foreign Buyer Shows. Descriptive articles follow.

<u>SHOW</u>	<u>LOCATION</u>	<u>DATE - 1977</u>
* Building & Construction Exposition & Conference	Chicago, Ill.	Nov. 1-3
Southern Plant Engineering & Maintenance Show & Conference	Atlanta, Georgia	Nov. 1-3
International Pollution & Engineering Exposition & Congress	Atlanta, Georgia	Nov. 1-3
Energy Fair, Inc.	Anaheim, California	Nov. 3-6

Requests for Further Information on the Preceeding
Shows can be obtained by writing:

Joseph S. Cooper
U. S. Department of Commerce
Office of Energy Programs
Room 2016 (CN)
Washington, D. C. 20230

*Listed events/dates are subject to change or cancellation
without prior notice.*

Meetings and Congresses

Energy Technology -4 Conference & Exposition	Sheraton Park Hotel Washington, D. C. (Govt. Institutes 4733 Bethesda Ave., Wash., D. C. 20014)	March 14-16, 1977
Fourth International Symposium on Automotive Propulsion Systems	National Motor Hotel Arlington, Va. APS Symposium Ms. Jan Tosh Mechanical Technology, Inc. 968 Albany-Shaker Rd., Latham, New York 12110	April 17-22, 1977

* U.S. Foreign Buyer Shows. Descriptive articles follow.

U.S. FOREIGN BUYER SHOWS

U.S. APARTMENT BUILDER/DEVELOPER SHOW HIGHLIGHTS ENERGY CONSERVATION -- The 9th Annual Apartment Builder/Developer Conference and Exposition, multihousing's most prestigious industry event, will take place on May 23-25, 1977 in Las Vegas, Nevada. Due to its broad industry appeal, this show attracts members from every facet of the multi-housing field: builders, developers, contractors, financiers, kitchen/bath dealers and distributors, apartment owners and managers and others. Over 7,000 executives from the U.S. and overseas will attend the Las Vegas event. Attendees will hear over 100 leading housing experts share new ideas on financing, construction, planning, development and other important industry topics in a comprehensive Conference Seminar Program. The 40 seminars will be presented during the three-day course of the Show.

The 1977 event will devote special attention to energy conservation and its effects on multi-housing developments through seminars entitled: "Reducing Energy Consumption," "Saving Energy and Money in Existing Apartments," and "Actual Facts on Installed Solar Energy." In addition, the Expo will feature many energy saving systems and equipment.

The extensive Exposition features every product/service category involved in multi-housing construction and remodeling. Attendees will see more than 300 prominent U.S. manufacturers exhibit all types of building materials, kitchen cabinets, bathroom vanities, flooring, lighting, heating and air conditioning equipment, security systems, rental and financial services, just to name a few.

Sponsored by Gralla Publications Multi-Housing News, this event for the first time is participating in the U.S. Department of Commerce Foreign Buyer Program.

FOREIGN BUYER SHOWS (CONTINUED)

BUILDING AND CONSTRUCTION EXPOSITION AND CONFERENCE --

The Building and Construction Exposition and Conference will be held at McCormick Place, Chicago, Illinois, on November 1-3, 1977. The Exposition will show structural and architectural building materials, HV and AC equipment, lighting, electrical interior building materials, paints, plumbing fixtures, appliances, sealants, adhesives, fire protection security systems, insulation, builders hardware, machinery and tools, production equipment for manufacturing of roof and floor trusses; pre-hung doors. Wall sections and package homes, concrete forming, site preparation machinery and materials handling equipment. *It will also feature products and systems of solar and windpower systems for heating, air conditioning, water heating and electrical generation.*

The Conference is designed to provide advanced techniques and new ideas for better promotion and performance efforts by every member of the Building Team. There will be several sessions held which include seminars on the commercial market, residential market; sessions on profits to be made by recycling old buildings; energy; and individual sessions on public buildings, the international market, urban renewal and new professional ways for architects/engineers to market their services.

INTERNATIONAL BUSINESS CENTER AT BOTH SHOWS --

Commerce and the show producer will co-sponsor an International Business Center at each of the preceeding two shows where officials will be available to assist foreign buyers in achieving their business objectives. Interpreters and other services will be provided and all international visitors will be invited to use the Center as their headquarters during the show. *Obtain forms for advance registration and hotel reservation at the U.S. Embassy or Consulate nearest you.*

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U.S. GOVERNMENT-SPONSORED EVENTS OVERSEAS

ENERGY CONSERVATION RELATED EVENTS

<u>DATE</u>	<u>LOCATION</u>	<u>EVENT</u>
October 1977	PHILIPPINES/HONG KONG/ TAIWAN (TSS) *	Energy Systems
(1977 Proposed)	BOTSWANA/IVORY COAST/ ZAIRE (TSS) *	Energy Systems
March 1978	CARACAS, VENEZUELA	Energy Systems Solo Exhibition

The theme of this U.S. Trade Fair will pertain to hydro-electric power production, thermal, diesel and gasoline electric power production. Products exhibited will include power generation, transmission and distribution equipment of all types. The exhibition will be held in the new U.S. exhibition facility currently under development in Caracas.

July 1978

10-14	TOKYO Trade Center	Energy Systems
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This theme will include instruments and accessories for nuclear applications and power generation and alternative energy sources such as liquefaction/gas processing equipment for coal, heating/cooling devices using geothermal and solar energy, as well as sea current/tidal generation equipment.

(The above events are subject to change without prior notice.)

* Technical Sales Seminar

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SOLAR ENERGY: Programs and Objectives

The Energy Research and Development Administration (ERDA) was established to bring together and direct Federal activities relating to research, development, and demonstration of all energy sources. One of the major technological options being developed is solar energy.

This program currently includes six general approaches to solar energy development and utilization.

Three subprogram areas can have nearer-term (within 10 years) impacts if the proposed plans are successful:

- solar energy for heating and cooling,
- wind energy conversion, and
- bioconversion to fuels.

Three other subprogram areas hold promise of providing significant amounts of electric power by the turn of the century.

- solar thermal conversion,
- photovoltaic conversion, and
- ocean thermal conversion.

All of these applications of solar energy, when combined, could supply a substantial percentage of U.S. total energy needs within the next 25 years.

The heating and cooling subprogram includes three major thrusts:

1) demonstrations of heating and combined heating and cooling systems;

2) system and subsystem development in support of demonstration projects; and

3) research and development aimed at improved, lower-cost reliable, long-lived systems including improved subsystems, components, and materials.

This subprogram is receiving about one-third of the total funds for solar energy. ERDA has overall responsibility for management, coordination, and implementation of the "Solar Heating and Cooling Demonstration Act of 1974." This act is designed to provide for meaningful demonstrations within a three-year period for the practical use of solar

SOLAR ENERGY: Programs and Objectives (Continued)

heating systems, and to provide for the development and demonstration within a five-year period of the practical use of combined heating and cooling systems. About 60 percent of the funding in the heating and cooling subprogram is designated for demonstration activities. The remaining funds are for research and development to solve problems arising from demonstration projects and to provide more economic systems and improved performance capabilities for later demonstrations.

The overall objective in each of the subprograms is to conduct demonstrations at the earliest feasible time for selected systems in operational environments. The results of these demonstrations are used to assess engineering performance and economic viability for projected commercial implementation. Along with the demonstrations, there are research and development projects in each subprogram to develop alternative approaches for systems and subsystems, supporting technology for the demonstrations, and information on environmental, legal, and other impacts in anticipation of large-scale commercial implementation.

General objectives in each subprogram for the five-year program are summarized in the following paragraphs:

Solar thermal objectives are to design, construct, operate, and evaluate a 10 megawatt electric, central receiver pilot power plant; a total energy (electrical and thermal) pilot power plant of 200 kilowatt electric and 2,000 kilowatt thermal size; a distributed collector pilot plant; and, test facilities for subsystem testing including a 5 megawatt thermal test facility.

Photovoltaic objectives are to reduce solar array prices to about \$5.00 per peak watt by 1978 through simpler, processing techniques, continuous production lines, lower-cost materials, and improved cell efficiencies; conduct materials, device and array, and manufacturing technology research and development leading to large-scale production capabilities and to solar array prices of about 50 cents a peak watt by the mid-1980's; conduct selected demonstrations of photovoltaic systems and cell production technologies with emphasis on silicon and cadmium sulphide devices and arrays and, conduct systems and application studies to identify cost-effective demonstrations.

SOLAR HEATING: Programs and Objectives (Continued)

Wind objectives are to develop and demonstrate large-scale (100 kw to multimegawatt electric) single-unit wind energy systems for selected applications, and large power systems consisting of multiple megawatt-sized units integrated with a utility grid or local power loads. Also research and development projects will be supported to examine alternative system concepts; improve system and subsystem performance, reliability, and economics; complete local and regional assessments of wind energy potential; and, conduct systems and applications studies.

Bioconversion objectives are to design, construct, operate and evaluate pilot plants for conversion of agricultural residue materials to methane gas; establish a technology base for conversion of plant biomass and organic waste material to clean fuels and petrochemical substitutes; establish a technology base for large-scale terrestrial and marine energy farming systems; and, establish technical feasibility of producing hydrogen by photosynthetic and biochemical methods.

Ocean thermal objectives are to design and construct facilities for test and evaluation of components and subsystems for ocean thermal power plants; design, fabricate and test subsystems and systems; and, assess storage and transportation of energy and other forms of products from ocean power plant locations to the U.S.

The *Federal budget for solar energy technologies* in FY 1975 totaled about \$55 million. The 1976 Budget grew to \$108 million and the Fiscal 1977 budget is expected to be even larger.

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Solar Energy: A \$10 Billion Industry By the Year 2000?
Solar energy could be a \$10 billion industry providing 7 percent of the nation's energy requirements by the year 2000. That means the sun would heat 17 million or 15 percent of the nation's buildings by that time saving the equivalent of five million barrels of oil a day, according to an ERDA energy official. (Commerce America, January 17, 1977)

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TRADE AND TECHNICAL LITERATURE

SELECTED ENERGY PUBLICATIONS AVAILABLE THROUGH NTIS

The National Technical Information Service (NTIS) of the U.S. Department of Commerce is the central source for the public sale of Government-sponsored research, development and engineering reports and other analyses prepared by Federal agencies, their contractors or grantees, or by Special Technology Groups. NTIS also is a central source for Federally generated machine processable data files.

NTIS is obligated by Title 15 of the U.S. Code to recover its cost from sales. The distribution of its information products and services is self-sustaining from the registration fees charged for information entering the system and from the sales of its products and services.

SUBSCRIPTIONS AVAILABLE

WGA Energy

The Weekly Government Abstract newsletter on Energy provides readers with timely research summaries on energy sources; energy use, supply, and demand; power and heat generation; energy conversion and storage; energy transmission; fuel conversion processes; energy policies; regulations and studies; and engines and fuels. NTISUB/B/097-76/PW \$45 (\$60*)

NASA Bibliography with Indexes

The National Aeronautics and Space Administration is introducing Energy: A Continuing Bibliography with Indexes, published quarterly.

Coverage includes regional, national and international energy systems; research and development on fuels and other sources of energy; energy conversion, transport, transmission, distribution and storage with special emphasis on the use of hydrogen and of solar energy.

The NASA energy quarterly has five indexes which are cumulative through the year. They include subject, personal author, corporate source, source, contract number and report number. An annual subscription is \$25 (\$35*).

**Prices outside North American continent.*

Monthly Energy Review

The Monthly Energy Review is the principal communications medium for the Federal Energy Administration and its constituency. It incorporates the energy information previously published in the PIMS Monthly Petroleum Report, the supplements to PIMS and Monthly Energy Indicators.

The Review averages about 48 pages an issue in five major parts with additional data elements being developed. The major parts are an Overview, summarizing events of the previous month; Energy Sources; Electric Utilities; Resource Development; and Price. An annual subscription is \$36 (\$50*). Single copy \$4 (\$6.50*).

SELECTED REPORTS AVAILABLE

An Inexpensive Economical Solar Heating System for Homes, July 76, 59p, order N76-27671/GIU PC\$4.50/MF\$3.00.

Engineering of Wind Energy Systems. J.F. Banas, and W.N. Sullivan. Sandia Labs., Albuquerque, N.Mex. Jan 76, 24p SAND-75-0530/GIU PC\$3.50/MF\$3.00.

Hydrogen-Fueled Internal Combustion Engine, a Technical Survey of Contemporary U.S. Projects. ETA Report PR-51 W.J.D. Escher. Escher Technology Associates, St. Johns, Mich. Sep 75, 124p TEC-75/005/GIU PC\$5.50/MF3.00

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Construction Engineering Research Lab (Army) Champaign Ill 1976, 14p

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Natural Gas. Part 1. Supply, Demand and Utilization. (A Bibliography with Abstracts)

Edward J. Lehmann.

National Technical Information Service, Springfield, Va. Jun 76, 211p

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TRW Systems Group, Redondo Beach, Calif. Aug 75, 147p

N76-22665/3PSA PC\$6.00/MF\$3.00

Design, Fabrication, Testing and Delivery of a Solar Collector

W. H. Sims, R. W. Ballheim, S. M. Bartley, and G. W. Smith. Chamberlain Corp., Waterloo, Iowa. Research and Development Div. Jan 76, 231p

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General Electric Co., Schenectady, N.Y. Feb 76, 54p

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Federal Energy Administration, Washington, D.C. Office of Oil and Gas Analysis. May 76, 12p
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Massachusetts Inst. of Tech., Cambridge. Energy Lab. May 75, 33p
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4. Fossil Energy Update (FEU), a monthly abstracting journal announcing current literature on coal, natural gas, petroleum, oil shale, hydrogen production, electric power engineering, and MHD generators.
5. Solar Energy Update (SEU), monthly abstracting journal announcing literature on solar energy.
6. Geothermal Energy Update (GEU), a quarterly abstracting journal announcing literature on geothermal energy.

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NEW PRODUCTS U.S.A.

WORLDWIDE ADVERTISING FOR NEW U.S. "ENERGY EFFICIENT" PRODUCTS

The following new "energy efficient" products have been selected by the Department of Commerce to receive worldwide publicity through the commercial newsletter program.

Because of worldwide interest in energy conservation, Commerce has published this specialized edition of the Commercial News for the Foreign Service (CNFS) and a large portion of this issue, as you will note, features new and improved "energy efficient" products.

An "energy efficient" product is defined (for purposes of this publication) as any product that minimizes the use of fuel or electricity as compared to the fuel or electricity requirements of the normal product or method in use. Of course, the amount of money saved in energy costs should justify the capital expenditure made in purchasing and installing the energy efficient product.

This Commerce publication, as you know, is regularly forwarded to 240 U.S. Embassies and Consulates overseas. The new product information is reprinted in 60-70 post commercial newsletters depending on individual market applicability. The combined distribution of these overseas newsletters is to over 100,000 key industry and foreign government officials.

These same "energy efficient" products will be broadcast weekly by the Voice of America (VOA) and featured in bi-weekly USIA "International Press Service" releases during the months of March and April (which corresponds to the date of the "Energy Conservation" issue of CNFS).

Please note that the following page, "Contents - New Energy Efficient Products Section" categorizes the selected products. The successive pages list promotional product descriptions along with the name and address of each manufacturer. Also the Standard Industrial Classification (SIC) number for each product is identified.

Bringing new energy efficient products to the international business community is not only meeting a growing market demand but also is offering a positive approach to extending the world's dwindling energy resources. PLEASE PUBLISH AS MANY OF THESE NEW "ENERGY EFFICIENT" PRODUCTS AS POSSIBLE. Your comments regarding this publication are welcomed.

CONTENTS - NEW ENERGY EFFICIENT PRODUCTS SECTION

Every effort was made to ensure that the following products were correctly categorized and the appropriate Standard Industrial Classification (SIC) number was identified. In some instances; however, a new product could conceivably be listed under more than one product category or SIC number. Hopefully, the most appropriate selection was made in each case.

<u>Product Category (and General Definitions)</u>	<u>Page</u>
<u>AGRICULTURAL AND FOOD PROCESSING EFFICIENCY</u> Reduction of the energy consumed in producing and processing food and fiber products by development of higher efficiency processes.	33
<u>BUILDING SYSTEMS</u> Technologically advanced energy efficient measures for use in both commercial and residential buildings.	35
-- Building Construction	35
-- Building Energy Monitoring Systems and Controls	37
-- Heating, Ventilating, Air Conditioning and Controls (Other than Solar)	40
-- Solar Heating, AC and Related Equipment	47
-- Insulation and Related Equipment	52
<u>ENERGY AND SCIENTIFIC DEMONSTRATION EQUIPMENT</u> Examples of the state-of-the-art in various areas of energy conservation and the use of alternative sources of energy are available for demonstration purposes in the school, industrial plant, industrial exhibit and laboratory.	55
<u>INDUSTRIAL PROCESS EFFICIENCY</u> Improvement of energy efficiency of processes within specific energy intensive industries such as basic metals, cement, glass, etc. to reduce the energy consumed per unit and to substitute an inexhaustible fuel for oil and natural gas in industrial processes.	58
<u>TRANSPORTATION</u> Energy conservation in transportation includes products and equipment that reduce dependency on imported oil and provide an increased end-use efficiency.	68
<u>WASTE ENERGY REDUCTION</u> Reduction of waste energy of industrial processes by improvements in energy efficiency in the equipment and processes that have broad application to a wide spectrum of industries.	70

"ENERGY EFFICIENT" PRODUCTS
PROMOTIONAL DESCRIPTIONS

The following product information has been selected by the Department of Commerce for promotion through the New Product Information Service (NPIS). This information is also made available by Commerce on a selected basis to USIA and VOA. While the firms mentioned in CNFS are believed to be reliable, no responsibility can be assumed by the U. S. Government or its representatives for the accuracy of the new product descriptions which are based on information supplied by the listed U. S. firms. Both technical and non-technical products are deliberately included in CNFS to ensure worldwide market applicability. Please reprint as many new product descriptions as possible.

AGRICULTURAL AND FOOD PROCESSING EFFICIENCY



*SIC 3589 COMPACT BREAD AND BUN TOASTER -- The RT-2 offers a new high-speed rotary approach to bread and bun toasting in a relatively small amount of counter space - less than 16 in (40 cm) wide. The company says it delivers toast at the fast clip of 2 slices every 10 seconds - that is roughly the rate of 3 four-slice pop-up toasters all working together. Also, at the flip of a switch the RT-2 is ready to toast bun halves in seconds. Potential end-users include hospitals, hotels, restaurants, fast food operations, and coffee shops. Price range is \$468. WRITE: J. G. Carville, Savory Equipment Company, Dept. CN, 349 Essex Road, P.O. Box 610, Neptune, New Jersey 07753 U.S.A.

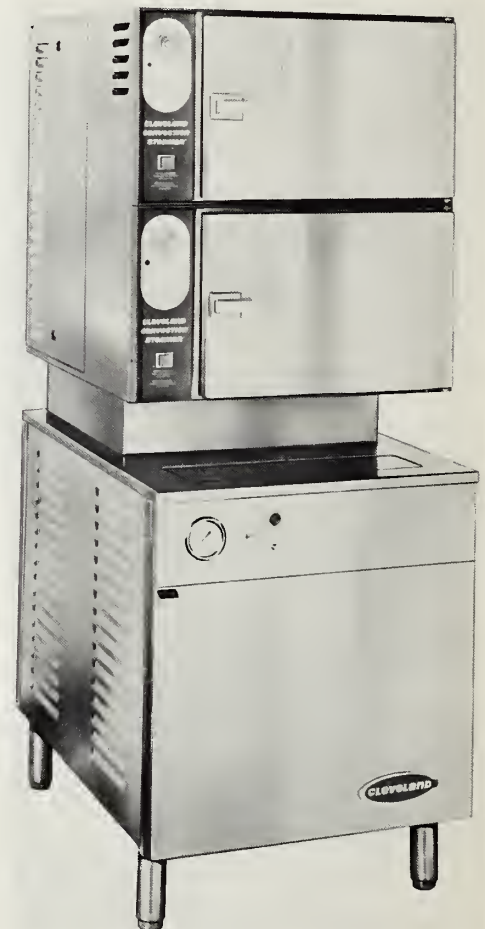
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* Standard Industrial Classification (SIC) Number

- 3523 WATERPUMPING WINDMILL -- The company says this product is easy to understand, uncomplicated to construct, requires little maintenance, uses the wind as a non-polluting source of energy and comes in four different sizes depending on the type of pumping needs of end-user. The practical applications include pumping water for domestic, as well as livestock consumption, agricultural irrigation systems; using where electricity and diesel power is too expensive an alternative; pumping water to reservoir or a holding tank (can be pumped up to 25 ft in the air); essentially a structure designed to be moved when necessary. Other features are: few moving parts; required maintenance is only an oil change once a year; a self-governing device to protect itself in case of violent weather. There is a one-year warranty on all parts and accessories. Company is actively seeking agents, distributors and importers of this type of equipment. WRITE: Steve Cottler, The Heller-Aller Company, Dept. CN, 22920 North Bellwood Drive, Southfield, Michigan 48034 U.S.A.

* *

- 3589 CONVECTION STEAMER FOR VOLUME COOKING -- The "Cleveland Convection SteamerTM" is said to produce perfectly cooked single portions, batches, or bulk foods - whether fresh or frozen - separately or at the same time, and reheat foods in a way that makes them look and taste freshly cooked every time. According to this company, pressureless forced convection steam is the most efficient and advanced method of volume cooking and is even faster than a conventional pressure cooker. Compartment doors may be opened at any time - even while the unit is operating - to add, remove, inspect, or season the food. Spacious independent compartments hold three standard size cafeteria pans. Company is currently seeking distributors. Potential end-users include food service institutions, etc. Current price is \$4,700. WRITE: Joel Elman, Cleveland Range Company, Dept. CN, 1333 East 179th Street, Cleveland, Ohio 44110 U.S.A.



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BUILDING SYSTEMS

Building Construction



3433 SOLAR BUILDING SYSTEM -- This company says they have produced a solar building system that collects and stores solar energy to heat itself and other structures. The system, "Solera™," is expandable for many uses and heating applications and the multi-functional "Solera" structures adapt to year-round "Solar Garden" greenhouses, patio enclosures and home additions. The firm says that "Solar Garden" is the first commercially available solar greenhouse with thermal storage. "Solus™" collector panels transform the "Solera" into solar sauna, furnace and hot water heater. WRITE: Richard S. Speed, Solar Technology Corporation, Dept. CN, 2160 Clay, Denver, Colorado 80211 U.S.A.

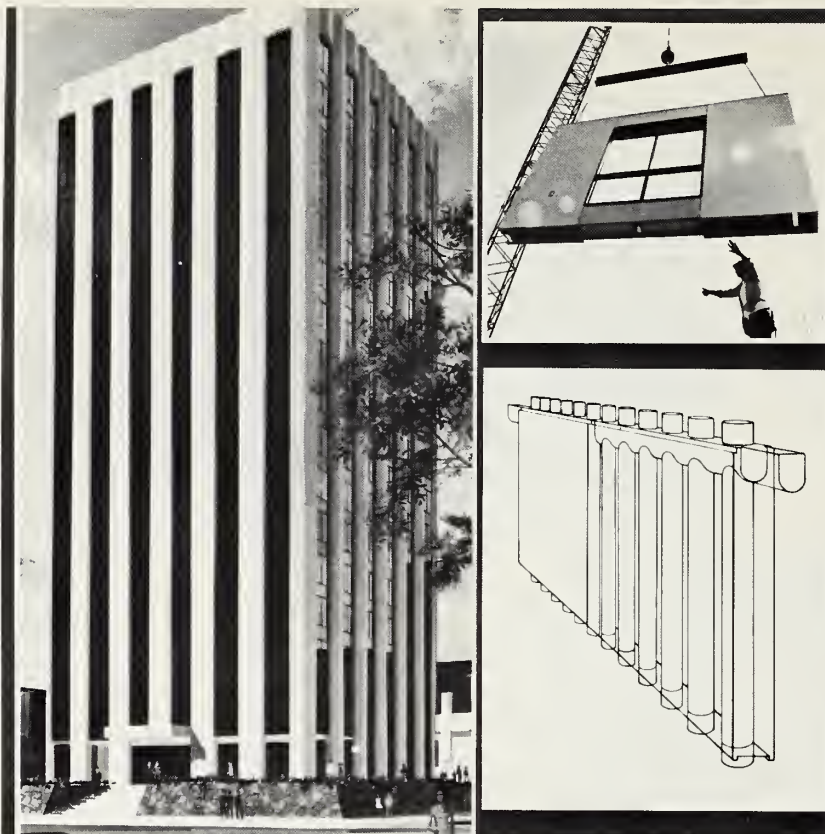
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5211 "FALCON" BUILDING SYSTEM -- This product is said to be a low energy-use housing system with a "U" factor of .083. The company says it lends itself to all architectural designs and can be erected in any country with local semi-skilled labor. The house is unique in using traditional, ready-available, components in a new concept. It is a sandwich panel system for exterior and interior walls with the same construction for the roof. A house using this system can be erected on a slab on grade and can be completed in eight working days at a low cost. Suggested for countries needing low cost to moderate housing. WRITE: William W. Giddens, Trans Atlantic Trading Company, Dept. CN, 5401 West Kennedy Boulevard, Lincoln Center, Suite 690, Tampa, Florida 33609 U.S.A.

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BUILDING SYSTEMS

Building Construction (Continued)



3079 INTEGRATED PANEL CONSTRUCTION TECHNOLOGY -- According to the manufacturer, the "U-Form" construction system uses standard building materials to achieve more and better results. The manufacturer says that "U-Form" building technology accomplishes seven different construction procedures at the same time, such as built-in: insulation; vapor barriers to eliminate condensation; a structure to eliminate the need for a separate structural frame; fireproofing; "furring" to accommodate any interior finish - or the interior finish, itself, can be installed; soundproofing to eliminate interior and exterior noise; and, an exterior veneer. The "U-Form" system is adaptable for both high-rise construction as well as low-cost, low-rise mass housing. This company says that because of the superlative U-factors ($U = .032$ or better) heating systems can be cut in half and air conditioning systems by one-third resulting in lower cost and significantly lower operating costs throughout the life of the building. WRITE: Melvin H. Sachs, U-Form Systems and Technology, Inc., Dept. CN, 29200 Vassar Avenue, Suite 700, Livonia, Michigan 48152 U.S.A.

Building Energy Monitoring Systems and Controls

- 3825 ELECTRIC POWER DEMAND LOAD LEVELER FOR STORES/SUPERMARKETS -- Electric power demand charges are increasing each year and in some areas, the demand charge is said to be as much as 25 percent of the total bill and it becomes important to level the peak demands to reduce this cost. This Demand Load Leveler is especially designed for convenience stores and supermarkets. The company says, unlike other load levelers, the DLL Series optimizes the number of load shed points to satisfy food store requirements at the lowest possible initial investment. Payback periods of six months to two years can be expected. Each load can be set on a pre-selected priority schedule and adjusted for minimum off time. Whenever the electrical consumption of the facility does not exceed the target setting, the management system controls no loads. Cost is \$1,800 (up).
WRITE: Grant M. Brown, Engineered Supermarket Products, Inc., Dept. CN, 2190 Coffee Road, Lithonia, Georgia 30058 U.S.A.

* *

- 3431 CONSERVARATORTM FOR FAUCETS -- The energy-saving ConservaratorTM faucet attachment is a self-compensating, constant flow restrictor. The Conservarator sharply reduces water consumption regardless of line pressure variation and/or changing faucet valve openings. The Conservarator is said to be the only device on the market today which provides a constant water flow of 2+ .23 gal per minute (vs. a typical 6-8 gal per minute) within a range of line pressures of 40 to 100 p.s.i. Plans have been formulated to include British Standard threads and ISO Metric Standard threads on export orders requiring either of these standards. Company is actively seeking agents and distributors. Suggested end-users include municipalities, homeowners, apartment complex owners, etc. WRITE: Ralph Minervino, WPM, Inc., Dept. CN, Waterbury Pressed Metal Division, 407 Brookside Road, Waterbury, Connecticut 06720 U.S.A.

* *

- 3823 ENERGY MANAGEMENT MICROCOMPUTER -- A low-cost Microprocessor Energy Management System (MEMS) designed to reduce both peak demand and average energy consumption is now available. This system, contained in a wall-mounted enclosure, can control up to eight different buildings each with up to 64 controllable points. A status display and report printer are integral parts of the front panel. Modifications to the control strategy may be made by the use of the display keyboard. Existing wiring may be used to cut initial installation cost. Training and start up are included. MEMS can be used in multiple low rise, and high rise commercial buildings as well as industrial plants. Actively seeking distributors. Price is \$14,000-base. WRITE: June Nelson, Technical Analysis Corporation, Dept. CN, 120 West Wieuca Road, N.E., Atlanta, Georgia 30342 U.S.A.

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3622 ENERGY MANAGEMENT SYSTEM -- The "Load Manager" energy management system limits peak electrical demand and also provides kilowatt hour energy reduction through an electronic load cyclor that can be programmed by either a time clock or temperature sensor. According to the manufacturer, load cycling can then be adapted to power demand patterns or time-of-day rate schedules. In addition, Pacific Technology, Inc., says that the lowered cost of electric energy will pay for the system in two years or less. The "Load Manager" can be used wherever the load is 200 Kw or greater. Typical applications include office buildings, factories, schools, hospitals, stores and hotels. WRITE: D. R. Hall, Pacific Technology, Inc., Dept. CN, 235 Airport Way, Renton, Washington 98055 U.S.A.

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3622 ENERGY MANAGEMENT SYSTEM FOR BUILDINGS -- Econ VI is a modular energy management system, designed to reduce building operating costs. Using the central console and remote DAP's (Data Acquisition Panels), Econ VI controls HVAC systems, lighting, building security and fire safety. It is a true digital communications system, using the DAP's as the link between the central console and the building's mechanical equipment (motors, pumps, fans, chillers, etc.). Programmed stop/start of equipment, status printouts, alarm signals and Power Demand Control are just some of the features offered by Econ VI. A Power Demand and "Cycle-off" program in the AS-9400 reduces electrical demand and energy consumption - lowering building operating costs. WRITE: Al Tempin, Barber-Colman Company, Dept. CN, 1300 Rock Street, Rockford, Illinois 61101 U.S.A.

* *

3699 "BULB/ENERGY SAVER" -- This is a new patented product that, when installed in a lamp socket between the socket base contact and the bulb base contact, will immediately increase bulb life by 300 percent to 500 percent plus show an electrical energy savings, according to this company. "Bulb/Energy Saver" is said to save so much that it will pay for itself before the bulb is replaced for the first time. The product is a round-wafer, thin disc which installs in seconds and is said to last the life of the socket. Agents, distributors worldwide and licensees worldwide wanted. WRITE: Laurence A. Weinstein, Design Engineering Association, Dept. CN, 56 Mercury Avenue, Tiburon, California 94920 U.S.A.

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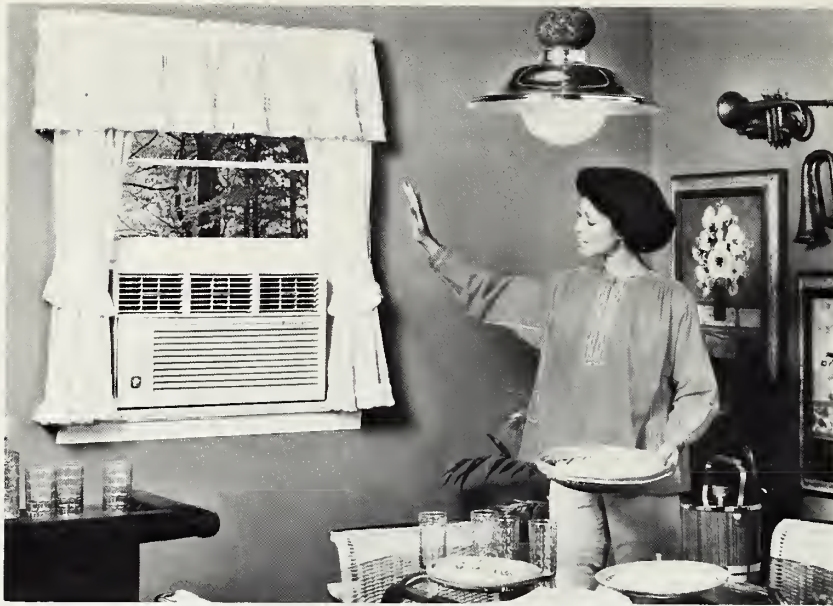
3622 ENERGY MANAGEMENT SYSTEM -- The "Lockheed 7600" is a computer-based, completely automatic energy management system whose "Shed-A-Watt" functions conserve electrical power by monitoring and (tending toward productive activity) controlling lights, heating and air conditioning systems; fans, motors, and other electrical loads in your facility. According to the manufacturer, the system is designed to lower consumption and peak demand charges that the electric utility companies use to charge the customer. Sixteen different load management programs allow the user to employ different methods of activation, such as by time of day, day of week, weekends, holidays, etc., or by sensor inputs. Such sensor inputs include thermostats, solar, wind, etc. Furthermore, the firm claims that the "Lockheed 7600" does not require a computer expert because the operator inputs are supplied through teletypewriter using all English commands. In addition, actual kilowatt hours saved is printed out each demand interval thus indicating the amount of energy saved. Systems can be extended to multi-building complexes using remote stations that share the central computer. Price is \$37,500. WRITE: Charles A. Sereno, Lockheed Electronics Company, Inc., Dept. CN, U.S. Highway 22, Plainfield, New Jersey 07061 U.S.A.

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3676 "POWERGUARD" CHECKS AGAINST ELECTRICAL SURGES -- The company says this new, unique, and proven electrical equipment protects equipment from damaging transient surges; reduces total operating costs for industrial, commercial and residential users; reduces costly maintenance bills, equipment replacement, down time and fights rising costs of electrical power. Complete range of equipment to cover any application and voltage range. Meets all M.E.T. and Underwriters Laboratory requirements and standards. Price range is \$125-\$179. Distributors wanted. WRITE: Fred L. Hurban, Powerguard Corporation, Dept. CN, 1940 S. West Boulevard, Vineland, New Jersey 08360 U.S.A.

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Heating, Ventilating, AC Systems &
Controls (Other than Solar)



3585

ROOM AIR CONDITIONERS -- This company manufactures and markets a full line of high energy efficient room air conditioners for both domestic and international distribution. Value Series models available for 60 Hertz usage range in size from 5,200 to 35,000 BTU/HR with energy efficiency ratios up to 11.5. Budget Series models have BTU's from 5,000 to 23,000 with energy efficiency ratio's up to 8.1. Budget models are available in size up to 24,000 BTU/HR supporting energy efficiency ratio ranges from 6.3 to 7.6. Any room air conditioner with an energy efficiency ratio of 7.5 or higher is considered highly efficient. These units are ideal for commercial and private use. Price begins at \$171. Company is currently seeking distributors and manufacturing opportunities abroad. WRITE: C. P. Klufas, Friedrich A/C and Refrigeration Company, Dept. CN, 4200 North Pan Am Expressway, San Antonio, Texas 78295 U.S.A.

* *

3444

SOLAR-POWERED GREENHOUSE WINDOW VENTILATOR -- This newly designed device offers extremely low-cost, maintenance-free, automatic greenhouse ventilation. Will lift 9 lb (3.8 kg) window unassisted; and a 20 lb (9.0 kg) window with counterbalance spring accessory. No electricity needed. When greenhouse temperature reaches 65° F (20° C), a heat sensitive material in the unit expands and moves to open the window. At 75° F (24° C), the window is closed. Installs in 15 minutes with drill and screwdriver. Guaranteed unconditionally 3 years. Can be used in many other applications where temperature must be controlled without access to electricity, i.e., open/close vents; raise/lower curtains; move shutters; etc. Price is \$24.95 retail. WRITE: W. A. Felknow, Dalen Products, Inc., Dept. CN, 201 Sherlake Drive, Knoxville, Tennessee 37922 U.S.A.

* *

3822 ELECTRONIC THERMOSTAT -- The "Therm O Guard" line of precision solid-state energy management controls boasts heating/cooling cost savings in excess of 30 percent for most areas. By sensing light, as well as temperature, "Therm O Guard" automatically reduces energy demand in buildings during unoccupied hours including holidays and weekends and maintains comfortable temperatures during occupied hours including periods of overtime. The company says it is the most effective control anywhere, and it directly replaces most conventional thermostats in minutes (commercial and residential) with no special wiring or batteries, no leveling, and no special adjustments. WRITE: Richard P. Gingras, Dynamic Electronic Controls, Inc., Dept. CN, 41 Kenosia Avenue, Danbury, Connecticut 06810 U.S.A.

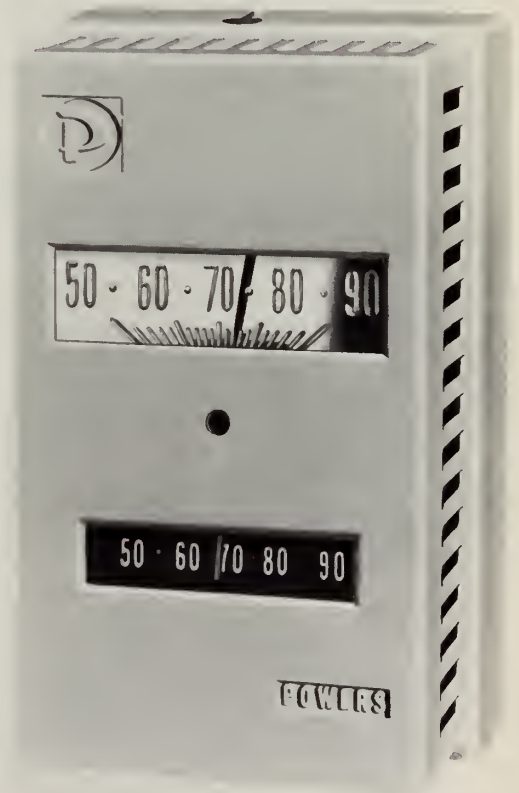
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3433 "GAS LOGS" -- "Gas Logs" are said to provide the warmth and comfort of a wood fire by simply turning on a gas valve. "Gas Logs" are hand-molded from special heat resistant materials. Within the logs is a scientifically designed heat chamber to intensify and radiate the heat. "Gas Logs" may be used in any vented, wood-burning fireplace. WRITE: James H. Davidson, Robert H. Peterson Company, Dept. CN, 2835 Sierra Grande Street, Pasadena, California 91107 U.S.A.

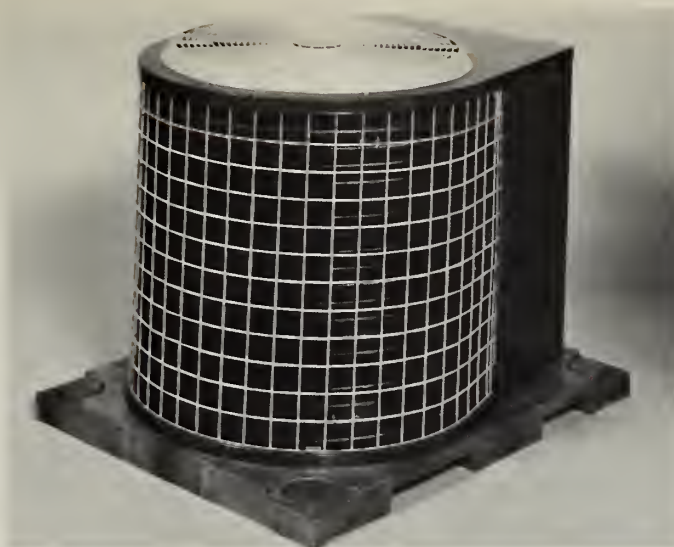
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3822 DAY-NIGHT THERMOSTAT FOR HEATING/COOLING -- Heating Systems: A central signal will automatically switch all thermostats in the building to lower setting at night and back to higher setting in morning. Lower night setting will conserve energy. Cooling Systems: A central signal will automatically switch the thermostats in the building to higher night setting and back to a lower setting in the morning. Higher night setting will conserve energy. End-users include all buildings using pneumatic temperature control systems. Price range is \$35. WRITE: A. W. Kaiser, Powers Regulator Company, Dept. CN, 3400 Oakton Street, Skokie, Illinois 60076 U.S.A.

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- 3639 WATER HEATER -- The "ConservationistTM" is a glass-lined water heater designed to conserve energy with substantially improved thermal and standby efficiencies. All models contain special double-density insulation which reduces standby losses - heat losses from the water after it has been heated. Instead of legs, the "Conservationist" has a pedestal base to help prevent dirt and to prevent cold drafts beneath the heaters. Gas models and electric models are available. According to the manufacturer, the gas model has two unique features: 1) the "ThermogardTM" dip tube which means more hot water for use; and, 2) a new thermostat control which shows the consumer the most energy efficient temperature at which to operate the heater. Capacity of the gas models range from 30 to 100 gallons. The electric version comes in 30 to 120 gallon sizes. The "Conservationist," currently being used in military housing, is recommended for all home owners. Prices range from \$200 to \$500. WRITE: R. E. Cook, A. O. Smith Corporation, Dept. CN, P. O. Box 28, Kankakee, Illinois 60901 U.S.A.
- * *
- 3822 HEATING CONTROL THERMOSTAT -- The company says the "Xelex 600" is a time-control, interim thermostat which automatically sets itself back to a predetermined low temperature which is governed by the builder prior to sale or occupancy of a home, office, etc. Advantages of the "Xelex 600" are said to be simplicity, ease of installation/removal and the fact that it can be used again and again and the company says it has the ability to pay for itself with one installation. Potential end-users include speculative builders of homes, apartments, offices, etc. Cost is under \$50. WRITE: James W. Jacobson, Xelex Manufacturing Company, Dept. CN, P. O. Box 3594, Bellevue, Washington 98009 U.S.A.
- * *
- 3822 THERMOSTAT CONTROL -- According to the manufacturer, the "Thermostat Governor" control is a solid-state instrument which overrides individual thermostat settings if they are above or below the preset governor limits. The governor then becomes an operating control and will control the temperature at its preset temperature. It is used in forced air heating and air conditioning systems. The thermostat is primarily used for the benefit of the owners when a tenant or occupant has control of the thermostat. The occupant then is prevented from setting the temperature above or below the limits set by the owner. The manufacturer says the "Thermostat Governor" reduces energy consumption and maintenance and it increases the durability of the equipment. Price is \$10-\$18. WRITE: G. R. Didow, Energy Controls Manufacturing and Supply, Dept. CN, P. O. Box 92085, Houston, Texas 77206 U.S.A.



- 3585 SPLIT SYSTEM AIR CONDITIONERS -- When properly matched with "Heil" evaporator coils, the "Hermitage Elite" condensing units feature an Energy Efficiency Rating from 8.9 to 9.4 BTU/WATT and "Heil" Top Discharge units feature solid-state fan controls. This patented device automatically regulates fan speed from approximately 500 to 1050 RPM's. The condenser fan reaches top speed when the ambient temperature reaches the range of 95° to 105° F. (35° - 40° C). Company is actively seeking agents and distributors worldwide. End-users include homeowners and small commercial buildings. WRITE: Al Amos, Heil-Quaker Corporation, Dept. CN, 647 Thompson Lane, Nashville, Tennessee 37204 U.S.A.

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- 3585 AIR CONDITIONING ECONOMIZER/VENTILATOR PACKAGED SYSTEMS -- The "Economizer" saves energy and reduces air conditioning costs by automatically utilizing outside air to cool or ventilate through the central air conditioning system when the outside temperature and humidity reach a comfortable level. The system consists of two modular units with all controls assembled and pre-wired. The outside wall module consists of the enthalpy comfort control, damper, automatic damper control motor, and grille - all installed in rigid steel sleeves. The return air module consists of a damper, automatic damper control motor, transformer and electronic controls. All operating parts and controls are installed in a similar rigid steel sleeve. The optional exhaust module consists of a damper, automatic damper control motor and controls installed in a rigid steel sleeve. Distributors desired. End-users are residential homes, and commercial buildings. Price is \$164 (up). WRITE: Richard J. Robinson, Lynn-Aire Products, Inc., Dept. CN, 196R Sams Street, Decatur, Georgia 30030 U.S.A.

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3564

EXHAUST-AIRE FAN -- This 14 in model has 4 deep-pitched aluminum paddle blades to pull the heat from super-hot attics fast, thereby reducing air-conditioning load and expense. It is designed to install on flat or pitched roofs, gable end or other vertical surface. Installation is easy and once in place, it is leakproof, rainproof, and bird and insect proof. The Exhaust-Aire operates automatically with Therm-O-Disc thermostatic control mounted in an integral junction box and operates with an adjustable range from 50° to 120° F. Its powerful exhaust action is designed to handle up to 1785 sq ft of attic space. A template is supplied to aid installation in making the 14 3/8 in opening between roof rafters or wall studs. Sound-absorbent rubber mounting is engineered into the unit. End-users are homeowners and small commercial buildings. Price: retail \$86.90; dealer - \$60.82; wholesale - \$48.65; quality discounts are offered. WRITE: James C. Bacon, Hunter Division, Robbins and Myers, Inc., Dept. CN, P.O. Box 14775, Memphis, Tennessee 38114 U.S.A.

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3634

RADIANT HEATERS -- Radiant Heat, as opposed to convected heat, heats the objects in a room rather than the air in the room. The "Aztec Radiant Heaters" look like pictures and have a specially patented surface which is said to give off more radiant heat than other surfaces. The "Aztec" heaters provide comfort without glowing coals, fans or high wattage. The surface is safe to touch and can be washed with soap and water. Furthermore, the manufacturer claims them to be virtually trouble-free since there are no moving parts. The picture panels are ideal for the consumer in need of supplemental heat. WRITE: Richard Silverberg, Aztec Marketing, Dept. CN, 181 E. 56th Avenue, Denver, Colorado 80216 U.S.A.

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3433 THERMAL STORAGE SYSTEM -- This company says these systems supply the hot water for building heat or domestic water needs by the use of heat exchangers submerged in treated water, sealed in a pressure vessel. Electric immersion heaters transfer the electrical energy which cannot be stored as such, into stored heat in the treated water during off-peak electric demand hours. This concept has three advantages: 1) permits commercial and industrial users of electrical energy to keep peak loads, which determine billing rates to a minimum and still take advantage of the benefits of electric hot water heating; 2) allows the use of low cost off-peak utility rates where available; 3) affords utilities an opportunity to sell more KWH's while improving the utility's load factor. Company actively seeking licensees for manufacture of Megatherm Thermal Storage Systems. End-users include commercial and industrial buildings. WRITE: Robert H. Stevenson, Megatherm, Dept. CN, 803 Taunton Avenue, East Providence, Rhode Island 02914 U.S.A.

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3433 DOOR/WALL HVAC (HEATING-VENTILATING-AIR CONDITIONING) SYSTEM -- According to the manufacturer, the HVAC Door/Wall System has a multiple function capability and thus reduces the need for a number of products and their oversized and overlapped functions. The HVAC provides multiple heating, ventilating, and cooling functions. The firm says that the HVAC has: saved over 66 percent in annual fuel costs; reduced initial building costs, door repair costs and door replacement costs; reduced floor level pollution; and, provided year-round, open-door control. The system can be quickly erected. Eight models are available for all commercial and industrial buildings. WRITE: A. Henson, Disco Engineering, Inc., Dept. CN, 1885 Long Pointe Drive, Bloomfield Hills, Michigan 48013 U.S.A.

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3433 INFRARED HEATER SAVES FUEL -- The Vented "Gordon-Ray" Gas Heater incorporates a highly effective new design concept in infrared space heating for factories, warehouses, terminals, garages, agricultural buildings, etc. Economy priced and attractively styled, this 21 ft (6.4 m) long infrared heater widely transmits healthful heat energy directly downward to the occupants, the floor and the building contents providing low-intensity warmth to the occupants without drafts. Company says customers report substantial fuel savings of from 30 percent to 50 percent over conventional heating equipment. The units are designed to burn natural or Propane gas and have a rated input of 75,000 BTU/HR. Company seeking agents and distributors for this product in Eastern Europe, Middle East and U.S.S.R. Current price is \$440. WRITE: Gordon Ray, Roberts-Gordon Appliance Corporation, Dept. CN, P.O. Box 44, 44 Central Avenue, Buffalo, New York 14240 U.S.A.

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- 3822 LIMITED CONTROL RANGE THERMOSTAT -- The Pneumatic Economizer Thermostat is designed to keep temperatures within limits. The thermostat restricts maximum heating to 75° and minimum cooling to 75°, regardless of the temperature setting. Potential end-users include the owners of commercial, industrial and institutional buildings. Price of the device is \$43.22. WRITE: Edward O'Brien, Honeywell, Dept. CN, Honeywell Plaza, Minneapolis, Minnesota 55408 U.S.A.

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- 3634 ENERGY-SAVING ELECTRIC HEATERS -- This company produces a line of electric, infrared heaters with self-contained heat sensors and solid-state modulating controllers that can be plugged into any suitable outlet, and can cut electric consumption up to 45 percent, according to the firm. Called "Modu-Ray (T/M)," these devices hold temperatures to within $\pm 1/2^\circ$ F. Being infrared they heat people, animals and objects directly, not heating the air in between, thus saving energy previously lost due to hot air rising, creating floor drafts and other convection currents. Still further energy is saved by utilizing a heat sensor instead of an on-and-off thermostat. These sensors, working in combination with the proprietary solid-state controller circuitry, cause only the current required to be drawn from the power lines. There is never a high wattage continuous power demand, as with on-and-off controls. These new heaters are recommended for agricultural, industrial, or residential use. Price range is \$100. WRITE: Bruce MacDougall, Kalglo Electronics Company, Inc., Dept. CN, 7 Winside Drive, East Allen Industrial Park, Bethlehem, Pennsylvania 18017 U.S.A.

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Solar Heating, Air Conditioning
And Related Equipment

3585 SOLAR COLLECTOR UNIT FOR HEATING WATER -- The "Ruby Mash" system makes use of the sun's energy through collectors to be heated, placed on the roof or on the ground. The main function of the solar heater is to heat water in quantity with a minimum use of fuel and power. The system is adaptable for house heating, hot water heating, swimming pools, greenhouses, and garages. According to the manufacturers, this unit is designed as a heat supplement system for homes equipped with conventional heatings or for new construction. Stored energy is transmitted to the water (or liquid) circulating through a coil made of copper pipe. The water is heated to temperatures ranging from 90° to 130° or more with adequate sunlight. According to the manufacturer, because of the "Ruby Mash" storage system, cloudy days or even snow on the roof have little effect on heating capability. Price is \$140. WRITE: George R. Gavdos, Jr., International Solar Heating, Dept. CN, P.O. Box 55, Front Royal, Virginia 22630 U.S.A.

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3433 SOLAR COLLECTORS -- The KTA Tubular Solar Collectors are double-glazed and fixed concentrating. The Collector consists of a number of parallel concentrator elements built into a frame of lightweight, architectural aluminum, covered with a tough, transparent plastic. A mirror finish is created by a silvered outer glass tube thus concentrating available sunlight on a spiral copper conduit - a pipe for fluids - running the length of the glass tubes. The copper conduit, coated with black oxide, transfers heat to water running through it. The Collectors are lightweight modules with components produced in volume. WRITE: Ted Knapp, KTA Corporation, Dept. CN, 12300 Washington Avenue, Rockville, Maryland 20852 U.S.A.

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3585 "SOLARGYTM" FOR HEATING/COOLING WATER -- According to the manufacturer, the SolargyTM Energy Conservation and Recovery Systems are designed to convert low-grade natural solar energy to high-grade energy for desired heating, cooling and hot and chilled water. SolargyTM systems feature high efficiency ratios, low-life cycle costs, and exclusive self-cleaning heat exchangers. Three systems are available: air to water, water to water, and water to air. All systems minimize energy losses, eliminate standby losses of stored heat, and are self-contained within the insulated space to adapt and operate harmoniously with any architecture. WRITE: Rodney L. Elkind, Singer Products Company, Inc., Dept. CN, One World Trade Center, New York, New York 10048 U.S.A.

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3433 THERMAL ENERGY STORAGE SUBSYSTEM -- These thermal energy storage units employing phase change materials, are compatible with solar collectors, evaporation air conditioners or heat pump. The unit, measuring 2 ft x 2 ft x 6 ft (.61 m x .61 m x 1.8 m) is designed for incorporation in a moving air duct. One or more units may be used in series to store and release thermal energy harvested from a variety of other sources both solar and non-solar. Alternately, the units may be used in conjunction with air conditioning and heat pumps. WRITE: Henry Hahn, Artech Corporation, Dept. CN, 2816 Fallfax Drive, Falls Church, Virginia 22030 U.S.A.

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3433 HOME SOLAR HEATING SYSTEM -- The "Solar I Heating System" operates with an inclined flat-plate collector and storage bank using a standard automatic thermostat to control heating. The collector, available in sizes from 6x18 ft to 12x44 ft (1.8x5.2m) to (3.65x13.4m), has high-density absorption characteristics and utilizes a criss-cross air flow scrubbing action to transfer the heat to the storage bank. The company says it maintains its efficiency with less critical dependence on orientation to the sun than many other flat-plate collectors. Size is chosen so that sufficient solar heat is collected on a full day of sunshine to supply one day's heating requirements and store enough heat for two additional days' requirements. A simple 2-point connection for the entire collector array serves to transfer collected solar energy to the heat storage bank. The latter consists of dry rock in an insulated enclosure. WRITE: Leonard A. Lowe, Solar I, Division of Industrial Erectors, Inc., Dept. CN, 21877 Euclid Avenue, Cleveland, Ohio 44117 U.S.A.

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3433 SOLAR COLLECTOR -- According to the manufacturer, the "Solelector" solar-energy collector has been developed for solar systems that require high-thermal efficiency, long-term performance, and minimum installed cost per BTU delivered. The high efficiency is said to be due to the "Enthone" selective surface on the absorber. This coating assures high absorption of the sun's radiation and low emittance of thermal radiation. "Solelector" solar energy collectors can be efficiently incorporated into systems that utilize heat up to 240° F. It can be used for water heating, space heating, space cooling, pool heating, laundry drying, crop drying, paper drying, snow melting, low temperature steam production, process heat, and distillation. The manufacturer lists several important features including a variety of available models, a five-year guarantee, easy installation, and, easy servicing. WRITE: Joseph R. Eisele, Sunthone, Dept. CN, P. O. Box 1900, New Haven, Connecticut 06508 U.S.A.

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3433 SOLAR HEATING SYSTEM -- The "Solar-Aire" heating system is a complete packaged hot air solar heating system. The solar collectors are a patented, perforated plate design which includes transparent collectors for visual panels. Collectors are mounted in wood frames for easy integration into the wall of the structure. The heat storage unit is composed of patented flat self-stacking plastic trays which contain the eutectic salt sodium sulfate decahydrate. These trays store latent heat at 90° F. Air is circulated between storage and collector by an air control unit which contains all dampers, damper motors and electric controls. The air control unit operates in four separate modes; heating, free cooling, off-peak cooling, and domestic water heating. Cost is \$6,000 - \$8,000. WRITE: James L. Schoenfelder, Solar, Inc., Dept. CN, Box 246, Mead, Nebraska 68041 U.S.A.

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3433 SOLAR FURNACE -- The "Sun-Trac" Solar Furnace is said to be an attractive, one piece, single unit, solar heating system which occupies a 96 sq ft (8.7 sq m) backyard area. It collects energy from the sun, converts it to heat, stores it, and delivers it as needed. Air circulating through the collection area is warmed by solar radiation and transfers the accumulated heat to the storage area which is inside the unit and consists of anywhere from 25,000 to 43,000 lbs of small rock, well insulated against heat loss. One of the blowers, (powered by a 1/2 hp electric motor), circulates air between the collection and storage areas during the day. A second blower moves heated air from the storage battery to the existing ductwork of the home's forced air heating system when the thermostat calls for heat. WRITE: William V. Thompson, Future Systems, Inc., Dept. CN, 12500 West Cedar Drive, Lakewood, Colorado 80228 U.S.A.

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3433 SOLAR ENERGY COLLECTORS -- According to the manufacturers these flat-plate type solar energy collectors are for all kinds of water heating needs such as bath and laundry, space heating, swimming pools, commercial and industrial uses. The collectors are available in various standard and special sizes. Single or dual glazing is available, as well as serpentine (coiled or twisted) or manifolded grid tube patterns; low, medium, or normal emissivity (ability to radiate energy) finishes for specific applications. The collectors have aluminum cases, glass covers, and copper tubing embedded in the aluminum collector bed. Engineering assistance is available in English units or metric equivalents. WRITE: Donald W. Barlow, Sr., Solarmatic Division OEM Products, Inc., Dept. CN, 220 W. Brandon Boulevard, Brandon, Florida 33511 U.S.A.

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3443 "SUN-GRABBER" SOLAR COLLECTORS -- "Sun-Grabber" Solar Collectors are said to be an effective, low-cost means of gathering the sun's energy for heating purposes. The collectors can be used for space heating, swimming pool heating, and for domestic hot water. The material used on the collector plate is copper. Copper collector plates minimize corrosion problems; increase heat transfer; insure long durability; and, eliminate bonding problems since the tubes expand at the same rate as the collector plate. Water transport is through copper tubes; air is transferred by duct. The plate is within an insulated box and covered by a 1/8 in (31 cm) thick tempered low-iron glass. WRITE: Don Erickson, R-M Products, Dept. CN, 5010 Cook Street, Denver, Colorado 80216 U.S.A.

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3433 SOLAR COLLECTOR -- "Sunseeker" is said to be a practical approach to harness solar energy for any heating need that falls into the working temperatures of flat-plate collectors 32° F to 225° F. The solar-heat collectors are available completely assembled or in kit form. The insulated fiberglass container is said to be a lightweight, non-corroding, durable, trouble-free insulator. The absorber is copper so as to provide the best heat transfer without corrosion. The manufacturer says the sturdy insulated low-iron tempered-glass cover provides the best transmittance without fading and reduces reradiation of collected heat. The "Sunseeker" can be sized to meet individual needs. Price is \$345 (list). WRITE: R. W. Ellis, Sunseeker Systems, Inc., Dept. CN, 100 W. Kennedy Boulevard, Tampa, Florida 33602 U.S.A.

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3433 SOLAR HEAT UNITS -- These pre-fab portable solar heat units are available in 3 sizes 69 sq ft (6.417 sq m) for heating domestic hot water; 233 sq ft (21.669 sq m) for domestic hot water, space heating and swimming pool application; and 466 sq ft (43.338 sq m) unit suited for larger homes, space heating, domestic hot water and larger swimming pool application. The larger unit also may be used for commercial hot water use such as resort hotels and motels, multiple family dwellings etc. These units' base price is approximately \$35.00 per sq ft depending upon application of the unit. The company says each unit produces between 100 - 200 B.T.U.s per sq ft per hour of daylight, depending upon latitude location. These units are said to be fully automatic and ready for immediate installation upon delivery. Distributorships are available. WRITE: Larry T. Gay, Kentucky Solar Energy Inc., Dept. CN, Route #1, Box 278, Frankfort, Kentucky 40601 U.S.A.

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3433 SOLAR COLLECTOR PANEL FOR RESIDENTIAL, COMMERCIAL AND INDUSTRIAL FACILITIES -- These flat-rate solar collector panels are said to feature a unique framewall that allows for maximum flexibility in mounting. The specially designed aluminum extruded hinge mates with any section of the rigid framewall to provide a secure mounting. With this system, the panel is said to maintain its structural integrity in wind loads to 130 m.p.h. (209 km/hr). The panels have been designed for simplified field servicing. With the use of simple hand tools, all components are easily accessed through the front of the panel. The collector panel can be used in an open or closed circuit system with working pressures to 150 psi (10.5 kg/cm²) and with any heat transfer fluid compatible with copper. When properly operated, panels will provide dependable performance for a minimum of 30 years, according to the firm, and will provide thermal performance stability under operating and no flow conditions up to 300 F (149 C). WRITE: Jack C. Ryals, Solar Energy Products, Inc., Dept. CN, 1208 N.W. 8th Avenue, Gainesville, Florida 32601 U.S.A.

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3443 "SOLARON" SOLAR HEATING SYSTEM -- The "Solaron Air Heating System" is a complete, systems engineered unit which can provide space heating, domestic water heating, and swimming pool heating, as well as industrial process air and make-up air heating and industrial liquid pre-heating. The system includes collectors, an air handling unit, an automatic control unit, a pebble-bed heat storage unit, optional water heat exchanger, and selected dampers and mounting hardware. Solar Collectors: factory assembled solar air heating collectors that contain a flat absorber/heat exchanger and internal manifolding, sealed with two tempered-glass plates. Air Handling Module: consists of a set of automatic dampers, blower, motor and optional hot water heating coil. Automatic System Controller: a control unit, activated by a conventional thermostat, that is designed to continually monitor and regulate the operating modes of the system. Solaron is seeking agents, distributors, and licensees. End-users include homes, schools, agricultural, health-care facilities, indoor recreational facilities, industrial, etc. WRITE: R. W. Barker, Solaron Corporation, Dept. CN, 4850 Olive Street, Commerce City, Colorado 80022 U.S.A.

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Insulation and Related Equipment



- 3079 WEATHERSTRIPPING FOR ALUMINUM WINDOWS AND DOORS -- "Kessler KCS" is a triple extrusion weatherstrip that reduces air infiltration and lowers friction between window sash and frame, thereby reducing the loss of heated or air conditioned air and creating significant energy savings. A semi-rigid PVC base anchors a resilient polyolefin leg that presses three sealing polyolefin anti-friction strips against the opposing surface. These low-friction strips provide for easy operation, sliding, closing and opening. KCS is available in three standard weatherstrip widths for easy installation in all standard grooves. WRITE: Barry Rottenberg, Kessler Products Company, Inc., Dept. CN, 302 McClurg Road, Youngstown, Ohio 44501 U.S.A.

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- 3292 VERTICAL INSULATION PANEL SYSTEM -- The company specializes in manufacturing and installing thermal insulation and sheet metal lagging on industrial boilers, precipitators, baghouses, etc., and is actively soliciting its services to power companies, engineering firms, contractors, agents, distributors, etc. They will provide turn-key insulation and lagging services or supply materials. The company says their approach to prefabricated panel insulation systems is unique because their panels are applied with an attaching flange that extends back to the support system which gives them rigidity, strength, and long-life expectancy both in retention of insulation and in adherence to the equipment. WRITE: William S. Mathias, Global Lagging, Inc., Dept. CN, Route 4, Box 106A, Waverly, Tennessee 37185 U.S.A.

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3448

INSULATED ROOF AND WALL PANEL SYSTEM -- According to this firm, this new factory-insulated roof and wall system can substantially reduce a building's energy consumption through the years, as well as initial investments in heating and cooling equipment. This company says "Startherm" roof and wall panels are factory tested to deliver a U-factor of .05 (thermal transmission). This extremely low rating is achieved through the use of isocyanurate foam insulation and a new panel design that eliminates many of the problems previously associated with metal building insulation. For example, there are no through fasteners or compressed insulation points which can cause significant energy loss. In addition, all panels utilize unique new sidelap connectors which provide wind uplift resistance and greatly reduce heat loss through the joints. WRITE: Bill McCoy, Star Manufacturing Company, Dept. CN, 8600 South I-35, Oklahoma City, Oklahoma 73109 U.S.A.

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3079

REFLECTIVE WINDOW FILM -- "Reflecto-Shade," the company says is the latest development in energy control film, and gives the option of shutting out the heat of the sun or letting the sunshine in. Made of 10-mm thick perforated reflective window film, the shade has a total solar rejection of 75 percent. Sufficient light filters through for purposes of vision, but glare is eliminated. Under cold winter conditions, "Reflecto-Shade" insulates windows and re-radiates 47 percent of the heat back indoors preventing its loss through windows. By controlling the amount and time of sunshine indoors, "Reflecto-Shade" can be used effectively under any climatic conditions. End-users include office and home use. WRITE: J. J. Wadlinger, Madico, Dept. CN, 64 New Industrial Parkway, Woburn, Massachusetts 01801 U.S.A.

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3079

FOAM MACHINE FOR POURING, SPRAYING OR CAULKING -- The "Insta-Foam Froth Pak Kit" is a self-contained polyurethane foam dispensing kit. It is portable and versatile and requires no outside energy source to operate. The primary use is in filling voids (gaps or leaks) for insulation, flotation, or protection from the elements. The manufacturer states that a recent development utilizing the "Insta-Foam Froth Pak Kit" is the manufacture of building panels in remote areas without the aid of heavy fixturing devices. This particular "new system" allows the on-site manufacture of permanent housing or industrial buildings in remote areas or locations of natural disaster occurrence. WRITE: Roger K. Fisher, Insta-Foam International Inc., Dept. CN, 2050 North Broadway, Joliet, Illinois 60435 U.S.A.

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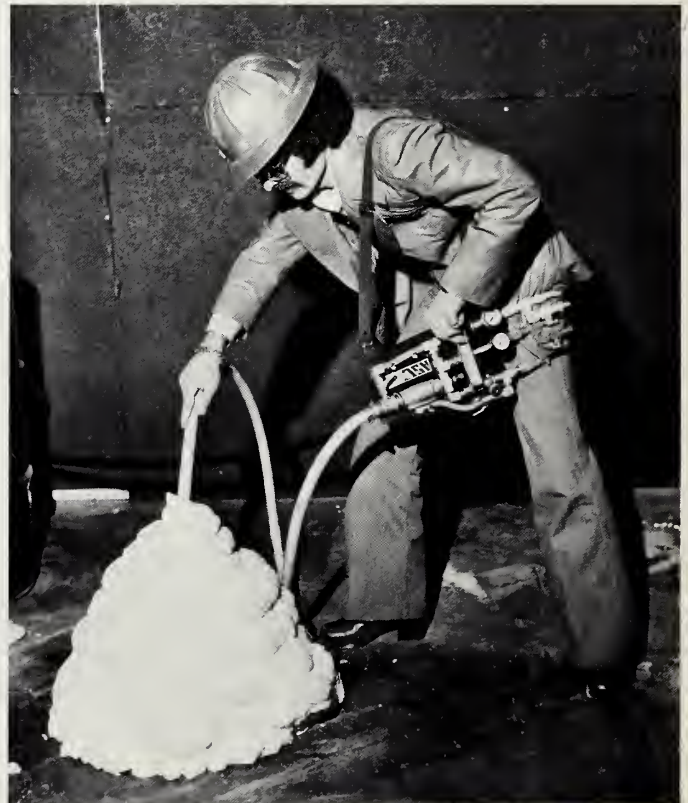
- 3079 URETHANE AND ISOCYANURATE INSULATION SYSTEMS -- The company says this is a very efficient commercial insulating material, with insulating capacity almost twice that of other insulation materials. It has versatile application methods --can be poured or sprayed in place, or applied as performed rigid insulation sheets. Properties are said to include low thermal conductivity; low moisture-vapor permeability; high strength to weight ratio; good dimensional stability; easily installed; economical; durable; impervious to most fungi and mildew. End-users are construction trades. WRITE: Charles G. Snoek, The Upjohn Company, Dept. CN, 7000 Portage Road, Kalamazoo, Michigan 49001 U.S.A.

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- 3079 WINDOW SHADE WITH INSULATING CAPABILITIES -- The "Magic-Fit, Window Shade," according to the company, has the ability to reflect sunlight and insulating capabilities for unusually warm climates. These versatile shades come in a wide selection of sizes, textures, colors and patterns and have shade hardware, accessories, and matching decorative trims. WRITE: Ron W. Bartz, Newell Companies, Inc., Dept. CN, International Division, 916 S. Arcade, Freeport, Illinois 61032 U.S.A.

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- 3564 "BIG BLOWER" INSULATION MACHINE -- The company says this machine performs six operations in one: sprays and blows rockwool, fiberglass, and cellulose. It is effective on existing or new structures. Optional equipment urea-formaldehyde foaming system. Price is \$5,900. End-users are insulation contractors. WRITE: Henry Sperber, Ark-Seal Corporation, Dept. CN, 931 West Evans, Denver, Colorado 80223 U.S.A.



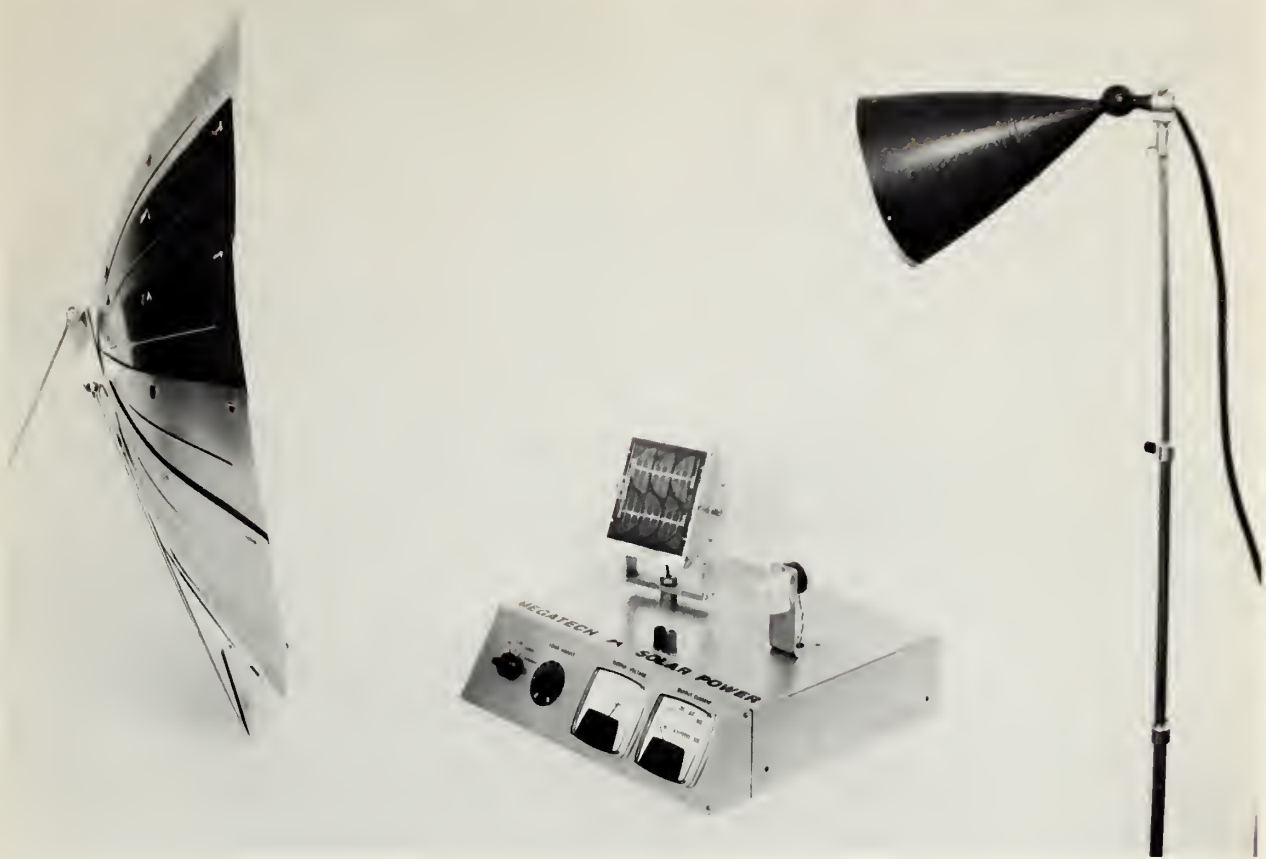
ENERGY AND SCIENTIFIC DEMONSTRATION EQUIPMENT



- 3811 WIND GENERATES ELECTRIC POWER -- The "Megatech's Wind Power Generator" demonstrates how electric power can be generated from wind. It employs a 3/4 H.P. two-speed fan which produces wind velocities of up to 20 miles per hour. A windmill is installed facing the fan to absorb the wind energy. A pitot tube measures the speed of the wind which is read on a large gage mounted on a chassis. The power output is controlled by varying the field current of the generator which causes the magnetic field to increase or decrease. This magnetic field acts on the armature just as a mechanical brake. Thus the field control knob allows the experimenter to control the power output. The software is written for the beginner with a minimum amount of text and maximum number of photographs. Each instruction is supplemented with photographic presentation, so that the student can conduct the experiments. Potential end-users include technical and vocational schools. Price range is \$1,395. WRITE: Ismail Nabih, Megatech Corporation, Dept. CN, 29 Cook Street, Billerica, Massachusetts 01866 U.S.A.



3811 SOLAR ENERGY LABORATORY -- The Solarco 7-A "Suntrack" is said to be a highly sophisticated, hi-temperature solar energy laboratory. The system includes a 1 sq meter parabolic concentrator with full two axis and tracking which keeps the unit always perpendicular to the sun thus receiving the 100 percent of available direct component solar energy. System also includes variable speed fluid flow pump, high reflectance parabolic mirror, selective coating (Black Chrome) receiver enclosed in a vacuum glass chamber and vacuum can be varied. All electronic circuits are individually fused. The "Suntrack" incorporates a 12-point automatic temperature recorder unit and is said to be suitable for a multitude of tasks, including accurate solar data acquisition, heat transfer, and power experiments. Suggested for universities, colleges, test laboratories, industrial firms and "on site" data gathering. Price range is \$4,000-\$9,000. WRITE: M. Uroshevich, Alpha Solarco, Dept. CN, 1014 Vine Street, Suite 2230, Cincinnati, Ohio 45202 U.S.A.



- 3811 SOLAR ELECTRIC GENERATOR FOR STUDYING ALTERNATE ENERGY SOURCES -- The "Megatech Solar Electric Generator" is a direct energy converter designed to absorb sun's rays (or high intensity light) and convert it into electric power. This is achieved by the solar panels which directly convert the radiated energy to electrical power without moving parts. The solar panels are mounted so that they can be oriented either in the vertical or horizontal plane. The incidence angle can be measured by the attached graduated scale in degrees. The electric power generated is measured by an ammeter and voltmeter mounted on a chassis. The power can be switched either to external load or internally to an electric motor which operates at various speeds depending on the power level. Software is available with the unit to aid the student in conducting experiments. A large number of photographs supplement the procedures to assist the student in performing his shop activities. Suggested end-users include technical and vocational schools. Price range is \$895. WRITE: Ismail Nabih, Megatech Corporation, Dept. CN, 29 Cook Street, Billerica, Massachusetts 01866 U.S.A.

- 3811 TRANSPARENT TURBINE PERMITS STUDENT TO OBSERVE OPERATION -- The Megatech Steam Turbine is designed for the purpose of generating electricity and exposing the basic elements of power generation. The Model ST-A1 has the following unique features to help the student in conducting shop activities. The Megatech Steam Turbine-Generator is a complete system where fuel is burned to produce electricity. It incorporates the basic elements of a power generating plant such as the boiler, turbine, generator, load control and power distribution. The causes of a black-out are demonstrated by turning on an excessive number of lights. Megatech's unique technology and expertise in transparent engine construction made it possible to develop a Transparent Turbine to enable the student to observe the mechanics and dynamics of steam injection and turbine operation. The boiler is made of copper for long endurance and for excellent heat transfer properties. The sight gage indicates the water level and is attached to the boiler pressure gage and safety release valve which is preset at 65 ps. End-users include technical and vocational schools. WRITE: Ismail Nabih, Megatech Corporation, Dept. CN, 29 Cook Street, Billerica, Massachusetts 01866 U.S.A.

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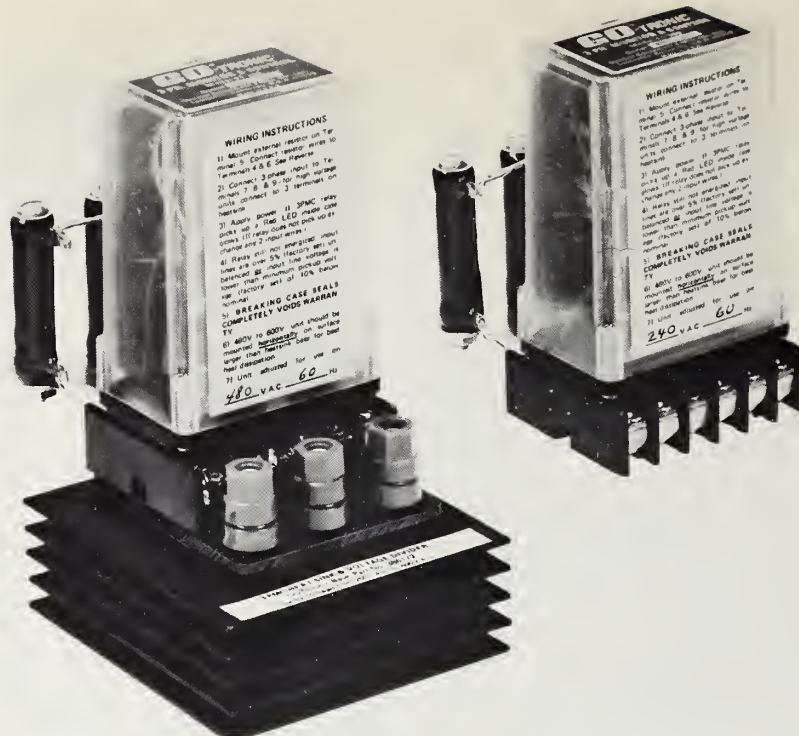
INDUSTRIAL PROCESS
EFFICIENCY

- 3623 CONTINUOUS TIG (TUNGSTEN INERT GAS) WELDING MACHINE -- According to the manufacturer, the "Type CW" Continuous TIG Welding Machine employs a new welding process which is continuous and eliminates the control problems of older techniques. Typical welding operations for the "Type CW" welder are reduced to at least one-quarter of the time of other methods, thereby providing a significant savings in electricity. Type CW is said to improve the conductivity and mechanical strength of other TIG Welding Machines. Furthermore, the manufacturer says his equipment is easy to operate and maintain. Suggested end-users include railroad locomotive shops, electric motor and generator repair shops, and motor and generator manufacturers. Current price range is \$23,000-\$35,000. WRITE: B. William Long, Cayuga Machine and Fabricating Company, Inc., Dept. CN, 200 Gould Avenue, Depew, New York 14043 U.S.A.

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- 3531 ROAD PAVER -- The company says modern efficiency and energy savings are achieved by this paving machine, since it most often uses asphalt emulsion to bond the aggregate. No solvents to be wasted in polluting the air. The aggregates do not have to be heated, which saves one to two gallons of fuel per ton. Local aggregates can often be used with a saving in trucking from a distant quarry. The increased capacity self-propelled three man plant cold mixes and lays 180 tons per hour. The operation is continuous. The larger hopper holds 6 yards of aggregate. The enlarged tank holds 2800 U.S. gallons of bitumen. The wider, chain driven belt conveys the aggregate to the pug mill where it is mixed with a controlled flow of bitumen then carried by augers to the full floating vibratory screed. Material can be spread up to 18 feet wide with optional hydraulic screed extensions. The Midland Mix-Paver now has modern caliper disk type brakes; paving speed of 120 ft per minute; with highway speeds up to 8.4 miles per hour. WRITE: Barre W. Banks, Midland Machinery Company, Inc., Dept. CN, Tonawanda, New York 14150 U.S.A.



- 3622 MOTOR DIGITAL PHASE CONTROL/MONITOR -- The "GO-Tronic" 3-Phase Monitor and Control, (Model 51-100) protects motors and saves energy and money. The company says it provides protection against phase unbalance, phase loss, phase reversal, incorrect phase sequence, and low-line voltage in spite of voltage regeneration from motors when a phase is lost. The control is compact, requires voltage connections only, and easily installed in any position. This unit senses "pulses", not voltage levels. According to firm, because of this characteristic, this unit works where others fail. Cost is \$235. End-users include users of pumps, fans, blowers, mining machinery, refrigeration equipment, etc. WRITE: Daniel T. West, General Equipment and Manufacturing Company, Dept. CN, 3308 Fern Valley Road, Louisville, Kentucky 40213 U.S.A.

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- 2843 "ENZYMES BRIGHT" CLEANS LAUNDRY WITH NO TOXIC EFFECT -- This is a free flowing, dust-free, non-toxic powder used for the rapid removal of all protein-type soil from laundry such as hospital, food, beverage, urine, feces, blood, grass, juice, etc. It is composed of blended enzymes, dispersing agents and fluorescents and removes all laundry soil except oil based, in ordinary water without use of high temperatures or bleach in minutes. Saves fuel, energy time and linen depreciation. Potential end-users include industrial and linen supply laundries, institutional, military, hospitals, etc. Price is \$110/drum and \$1.10 lb. WRITE: Walter Loebel, The Ultra White Company, Inc., Dept. CN, Box 1973, Roanoke, Virginia 24009 U.S.A.

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- 3823 TEMPERATURE CONTROL SYSTEM -- System 4200 is, according to the Williamson Corporation, a versatile, general purpose system for reliable, continuous temperature monitoring control of industrial processes involving opaque materials, such as the paper industry. The fully automatic system measures and monitors temperature without the need for checks, calibrations, or adjustments. Other potential users include, textile, plastics, chemical, rubber, electronics, and metal manufacturers. WRITE: Charles F. Langenhagen, Jr., Williamson Corporation, Dept. CN, 1152 Main Street, Concord, Massachusetts 01742 U.S.A.

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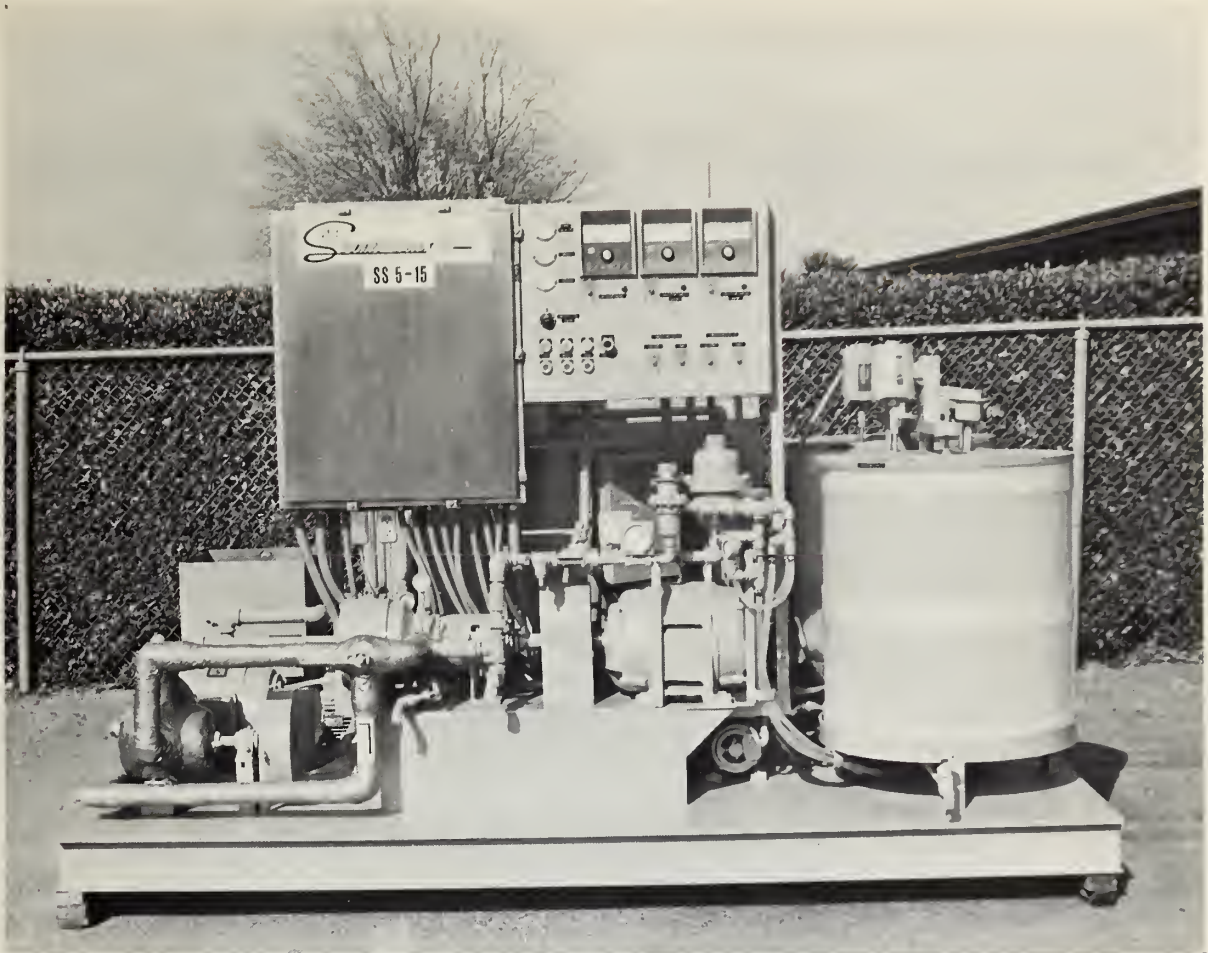
- 3317 FLEXIBLE HEAT TRANSFER TOOL -- This patented highly bendable "Turbotec" converts conventional mill tubing into spirally fluted configurations which create up to 2.3 times the overall efficiency per unit of pumping power as compared to standard heat transfer tubing and up to 400 percent enhancement in BTU/hr (KCal/hr) exchange, according to the company. The turbulence created by the unique "Turbotec" design brings greatly increased volumes of fluid to both inner and outer tube walls, allowing heat exchange to occur in far less time and in considerably shorter lengths. Turbotec tubing is available in most metals and in various dimensions. End-users include automotive, marine, biomedical, heat exchanger, air conditioning, and refrigeration industries. WRITE: Robert W. Perkins, Spiral Tubing Corporation, Dept. CN, 533 John Downey Drive, New Britain, Connecticut 06051 U.S.A.

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3559 DEGREASING EQUIPMENT -- This company says it has developed a new degreasing technique known as its "Variable Heat Refrigeration System." This system utilizes a refrigeration compressor to boil and condense solvents in such a system. This technique is said to reduce electrical energy by 83 percent, water and sewage by 100 percent, solvent by 25 to 50 percent, and eliminate the possibility of thermally decomposing the solvent. This unique design technique can readily save the user appreciable amounts of money in operating costs and can pay for the capital expenditure in less than one year. This return on investment is said to be substantial compared to conventional equipment found throughout the world. Corpans Industries is interested in selling these products worldwide and establishing representation. Additional consideration will be given to interests in licensing this technology. End-users include manufacturers of metal, glass, electronic, office equipment products, etc. Price is \$10,000 +. WRITE: James W. McCord, Corpans Industries International, Dept. CN, Bluegrass Industrial Park, 250 Production Court, Louisville, Kentucky 40299 U.S.A.

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- 3531 ASPHALT EMULSION PLANT -- The "Young SS 5-15 Basic Plant" permits quality asphalt emulsion production in any region of the world by semi-skilled local personnel because this "Basic Plant" contains all the sophisticated equipment and controls needed for a single operator to produce a wide range of emulsified asphalt types when "Basic Plant" is supplied with Hot Asphalt, local 220/440, 3-phase, 50-60 hz power, emulsifier, and storage for emulsions. Completely integrated emulsion facility can be furnished including tankage, emulsifier, asphalt heating, technical training, and management support. Continuous process concept permits "Basic Plant" to produce from 5-15 metric tons per hour of emulsion without need for labor and equipment common with large Soap Solution batch-process tanks of outdated facilities. Emulsions now widely used to replace cutback asphalt and asphalt cement in most road construction/ maintenance, waterproofing, mastic, asphalt paint, and dust palliative applications - with large savings in cost, energy, and environmental cleanness. Cost is approximately \$65,000. WRITE: R. T. Young, Slurry Seal International Inc., Dept. CN, P.O. Box 7677, Waco, Texas 76710 U.S.A.

- 3443 THREE-PASS TUBELESS BOILERS -- These vertical three-pass boilers are tubeless and thus eliminate the problems inherent in tubular boilers - tube leakage and replacement. According to the manufacturer, the three-pass design assumes maximum combustion efficiency, highly efficient heat transfer, using the least amount of fuel possible. Using the three-pass design, the heat is literally removed from the flue gases before allowing the products of combustion to enter the stack or chimney. These boilers were designed for the small boiler market, where pressure steam is needed for industrial processing. They are for use in textile and garment plants; food, candy, and meat processing; chemical operations; plastics, paint, dry-cleaning plants, and other industrial applications. WRITE: Ralph Ward, Industrial Boiler Company, Dept. CN, 221 Law Street, Thomasville, Georgia 31792 U.S.A.

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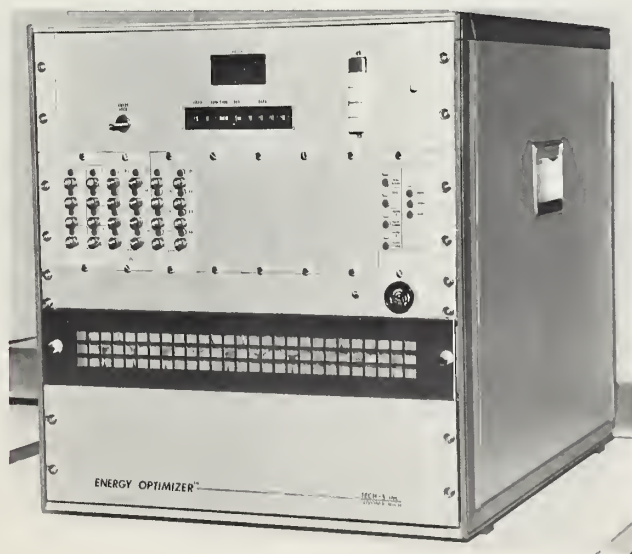


- 3564 PNEUMATIC POWERED TERMINALS -- The "Econ-O-Flo" induction variable air volume terminals are designed to provide both maximum comfort and minimum energy consumption. They utilize heat generated by lights, machinery and occupants to augment heat that otherwise must be purchased in the form of electricity or fuel. They provide more effective air movement than straight variable air volume types at minimum load conditions, avoiding ventilation problems. These pneumatic powered terminals are pressure independent and, unlike cfm limiting units, will maintain proper primary air flow under all load conditions, regardless of system pressure changes. Units are factory calibrated, eliminating the need for field calibration at the time of installation. WRITE: Al Tempin, Barber-Colman Company, Dept. CN, 1300 Rock Street, Rockford, Illinois 61101 U.S.A.

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3433 INDUSTRIAL OIL/GAS BURNERS -- These industrial burners are capable of performing with all grades of fuel oil and a wide range of waste oils, natural gas and LPG gas. They can be obtained as oil burners or gas burners only, or a combination of both. The new and proven models include many combined advanced and accepted combustion designs; some of which are: a) fuel saving from 7-20 percent per year; lower electrical HP requirements for total burner operation; b) venturi design resulting in low draft loss for a given mass air flow; the static air pressure is recovered in velocity which aids mixing of the fuel and air; c) burner is capable of operating with as little as 5 percent excess air resulting in less heated gas being exhausted out of the stack; d) special insulated wind box with apertures provides 100 percent control of secondary air when needed; e) low noise level; f) ten to one turndown ratio; and g) adaptable to boilers, kilns, driers, and furnaces. The Wisperflame models Mark I and Mark II are available in sizes from 500,000 Kg/cal to 63,000 kg/cal application. Company is seeking distributors. End-users include petro-chemical, wood, and boiler industries. WRITE: F. Patrick Ryan, General Combustion Company, Dept. CN, 2140 West Washington Street, Orlando, Florida 32805 U.S.A.

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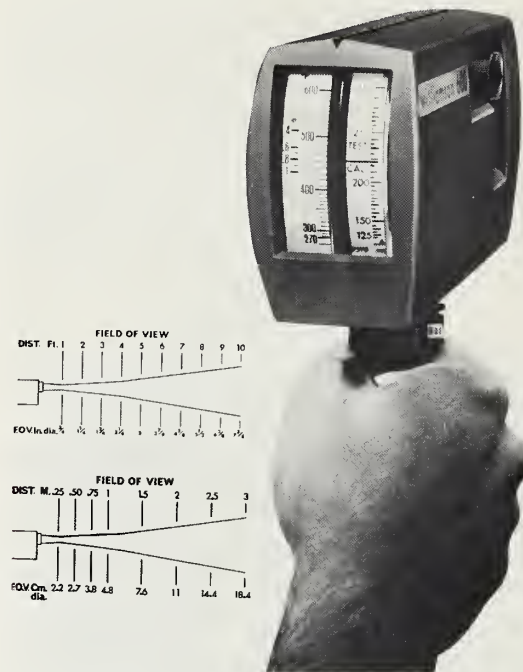


3573 ENERGY MANAGEMENT/PREDICTIVE POWER DEMAND CONTROL SYSTEM -- The "Tech-S Energy Optimizer™" system is said to be a complete Energy Management/Predictive Power Demand control system with many important features. The "Energy Optimizer" provides a method of reducing the KWH consumption by cycling a load(s) on or off. In addition, it provides a method of reducing the KWH consumption by scheduling a load(s)

INDUSTRIAL PROCESS EFFICIENCY (Continued)

off for portions of the day. Also, Predictive Demand Control supposedly means that the "Energy Optimizer" provides the most efficient means known of leveling the demands, i.e., contrary to blind on/off methods, Predictive Demand Control aims for the target (demand limit). Furthermore, the firm says the "Energy Optimizer" is fully automatic. WRITE: Robert J. Emerson, Jr., Tech-S, Inc., Dept. CN, 32720 Plymouth Road, Livonia, Michigan 48150 U.S.A.

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3823 TEMPERATURE MEASURING INSTRUMENT -- According to the manufacturer, several industries have found that using the Williamson Model 600 non-contact temperature measuring instrument has saved them energy, maintenance time, and money. Plastics machinery companies are using this rugged little portable to profile the extruder barrels to check on faulty heater bands. Too hot a temperature reading indicates poor band contact, while too low a reading points to an open heater or thermocouple. Additional end-users include paper plants, textile operations, plastics and electronic industries. The theme that all these energy, time, and money-saving applications have in common is fast, accurate, non-disturbing temperature measurement using non-contact monitoring instruments. Price is \$625. WRITE: Charles F. Langenhagen, Jr., Williamson Corporation, Dept. CN, 1152 Main Street, Concord, Massachusetts 01742 U.S.A.

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- 3531 ROAD PAVEMENT PROFILER -- This company says that "Roto-Mill" brings speed, efficiency and cost savings to pavement resurfacing projects of all types. It is said to be the first cold planer with automatic profile control. The "Roto-Mill" trims asphalt in depths of up to 4 in (10.16 cm) and up to 1 in (2.540 cm) in concrete. Cuttings are automatically loaded into trucks during the milling operation with a built in conveyor system. Asphalt cuttings are of ideal size and texture for recycling into new pavement (which conserves energy) and concrete cuttings make an excellent base material. The cutting mandrel, crawler tracks, steering system, control systems and reclaiming system are all automatic and hydrostatically driven. Machine width, 10 ft 5 in (3.17 m); height, 10 ft 5 in (3.17 m); length, including conveyor, 48 ft 1 in (14.66 m). End-users include highway contractors, government road construction and maintenance agencies, and airport authorities. Price range is \$225,000. WRITE: Tom Steele, CMI Corporation, Dept. CN, P.O. Box 1985, Oklahoma City, Oklahoma 73101 U.S.A.

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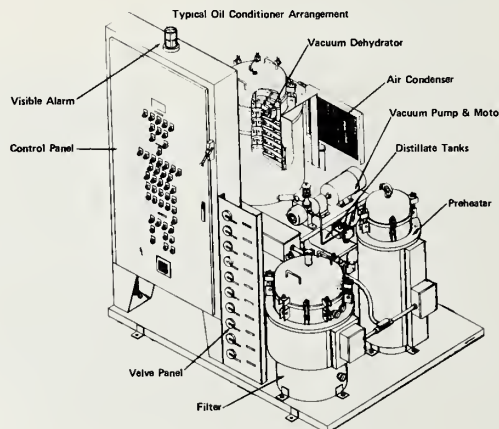
- 3621 ELECTRIC MOTORS -- The manufacturer of the "E-plus" motors says although they cost 15-25 percent more than standard units, the electricity savings resulting from their efficiency pays back this price premium within 1-2 years. In addition, all "E-plus" motors that draw 1000 watts or more have a minimum power factor rating of 85 percent (at full load) to reduce or eliminate costly power factor penalties charged by many electric utilities. The new motors are also said to offer cooler, quieter and longer operation than standard models. Price is \$143 - \$914 minus applicable discounts. WRITE: Michael H. Green, Gould, Inc., Dept. CN, 1831 Chestnut, St. Louis, Missouri 63166 U.S.A.

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TRANSPORTATION

2992 SYNTHETIC MOTOR OIL -- "Krona Syn," a 100 percent synthetic motor oil, is recommended by this company for all engines: gasoline, LPG, or diesel fueled. Moreover, it is said to be excellent for a variety of vehicle motors -- from passenger cars to heavy earth moving machinery. The manufacturer says that "Krona Syn" reduces engine wear and increases power output thereby providing greater fuel economy. Furthermore, since "Krona Syn" is not a petroleum based oil, it operates effectively over a temperature range of -45° to $+600^{\circ}\text{F}$. End-users include operators and owners of internal combustion engines. WRITE: Bill Reaver, Texas International Lubricants, Dept. CN, 6525 Midway Road, Ft. Worth, Texas 76117 U.S.A.

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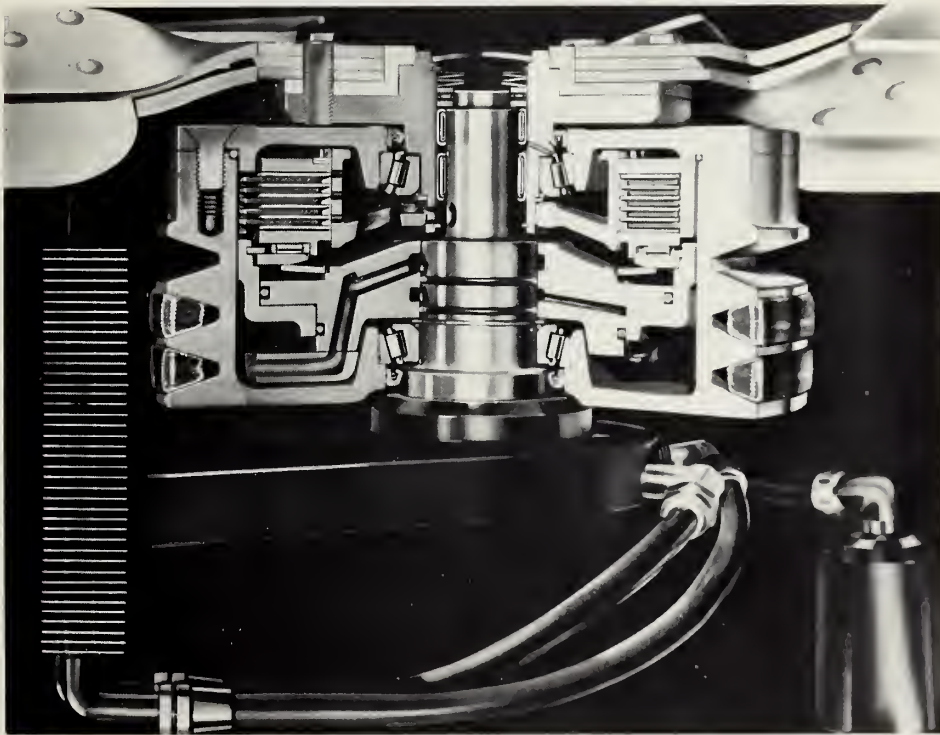


3569 OIL RECLAIMER -- This is a self-contained system that purifies industrial oils and extends oil life indefinitely using heat, vacuum, cartridge filtration, and clay treatment. The system handles flow rates from 6 - 4800 gal/hr removing solids, sludge, water, gases, air and solvents from most oils. The units can be made for fully automatic operation and may be equipped for shop or over-the-road mobility. A major energy recovery use is to add reclaimed oil to fuel oil supplies. The company says this equipment pays for itself in oil savings in a matter of weeks or months, depending on volume usage. End-users include heavy manufacturing industries, textile, transportation, utilities, etc. WRITE: Judith L. Allen, Allen Filters, Inc., Dept. CN, Filter and Injector Company, P.O. Box 747, Springfield, Missouri 65801 U.S.A.

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- 3694 PASER INCREASES ENGINE COMBUSTION EFFICIENCY -- The "Paser 500 Performance Economy Pack" is an electronic device which installs easily on the distributor cap of any ignition equipped engine to increase combustion efficiency using principals of electro-chemistry. The company says the "Paser" causes more complete extraction of energy from fuel and gives the following benefits in varying degrees to any engine: quicker starting; smoother running; increased horsepower; approximately 20 percent savings in operating costs; and reduced smog. Company is seeking distributors. Suggested end-users include individual, fleet and government vehicle owners. WRITE: Len Keys, AmerImex Industries, Inc., Dept. CN, 3251 Oradell Lane, Dallas, Texas 75220 U.S.A.

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- 3711 VARIABLE SPEED FAN DRIVE SYSTEM FOR HEAVY DUTY TRUCKS -- This company says that thousands of over-the-road truck miles, using this system, have resulted in better fuel economy, lower noise emission and improved engine performance and it will pay for itself in six months or less. The "Fan-Tem" Variable Speed Fan Drive is now available for a wide variety of engines. The system utilizes a self-contained, multiple-disc, wet clutch capable of continuous operation at any slip condition. The fan operates only at the RPM necessary to maintain proper engine operating temperature. The fan speed is controlled by a temperature sensitive air or hydraulic valve which regulates the release of the clutch. WRITE: Hugh L. Cole, Rockford Clutch, Dept. CN, Borg-Warner Corporation, 1200 Windsor Road, Rockford, Illinois 61101 U.S.A.

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3622 FUEL CONSERVATION SYSTEM -- According to this firm, the "MERPD Fuel Conservation System" is installed on board a ship and provides a readout that enables ships to compute fuel consumption and voyage length. Prior to the rise in the cost of fuel, the measurement of shaft rpm was considered to be a reasonable approximation. However, use of rpm as a guide to efficiency can easily cause 10 percent more fuel to be used. The "MERPD" method of measurement, according to the company, is recognized as the standard throughout the world, and the accuracy of the computed information can be used with confidence. Potential end-users include tankers, bulk carriers, and freighters which tow and push. Price is \$15,000 (up). WRITE: R. B. Sterns, Marine Electric RPD, Inc., Dept. CN, 166 National Road, Edison, New Jersey 08817 U.S.A.

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3585 REFRIGERATION CONVERSION UNIT -- The "Unifridge" PC4 series is a low-cost, solid-state, thermoelectric refrigeration conversion unit measuring 10 in x 10 in x 6 1/2 in (25.4 cm x 25.4 cm x 16.5 cm). It converts ice boxes up to 5 cu ft in capacity to 12-volt DC or 110-volt AC/12-volt DC electric refrigeration. "Unifridge" is unaffected by level or motion and operates in any position with no pipes, compressors, or gases. It is easily installed and virtually maintenance free. The refrigeration conversion unit employs low current-drain thermoelectric modules. Distributors and licensees are being actively sought. End-users include sail and power boats, caravans and recreational and medical vehicles, railroads, trucks, etc. Price is \$105 (in lots of 25 or more). WRITE: Yaf Yoshida, F.Y.A. Engineering Company, Inc., Dept. CN, Berth 44, Outer Harbor, San Pedro, California 90731 U.S.A.

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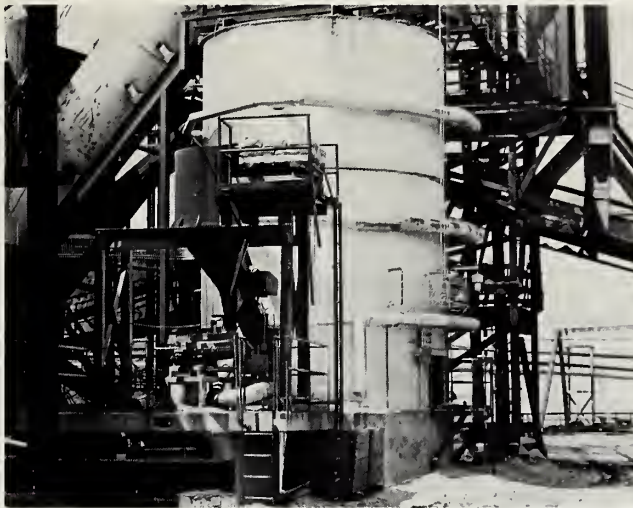
WASTE ENERGY REDUCTION

3443 SMICK TURBULATORS -- According to the firm, Smick Turbulators save 10 percent or more of fuel costs in gas and oil fired firetube boilers. Turbulators are easily installed in firetubes of new and existing boilers to make combustion more efficient and increase boiler heat transfer capability without causing maintenance problems. Increased boiler efficiency is measured directly by the reduction in chimney temperature and increased CO₂. Smick Turbulators reduce hot spots and improve waterside circulation without creating additional stress on the boiler. Turbulators are economically priced and usually pay for themselves in fuel savings in a few months. Less tube cleaning is required because of

WASTE ENERGY REDUCTION (Continued)

the improved combustion, scrubbing action, and turbulence in the firetube. Company is seeking importers, distributors, or dealers to handle these top quality products. WRITE: O. D. Bock, Global Traders, Inc., Dept. CN, 49 Weil Way, P.O. Box 570, Wilmington, Ohio 45177 U.S.A.

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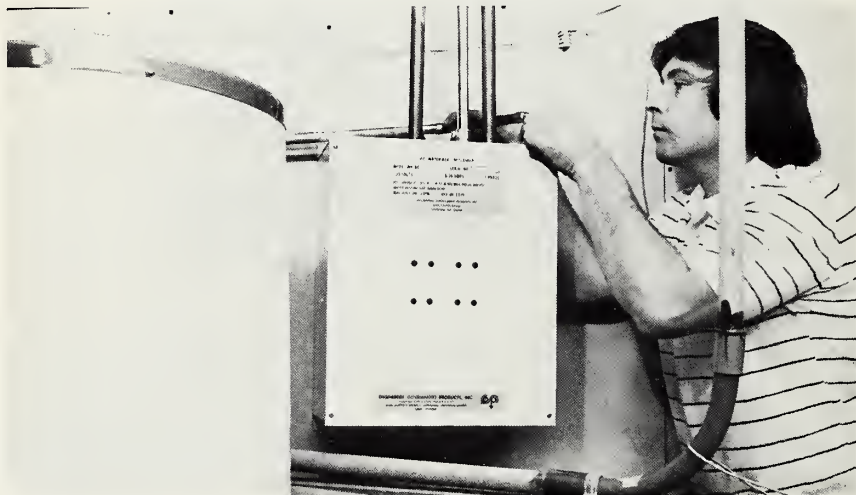


- 3433 FLUID FLAME SYSTEM -- The Fluid Flame System is a unique, efficient method for recovering energy from combustible wastes. Utilizing an inert, fluidized bed, the combustible material is efficiently and cleanly burned. Combustible materials with up to a 62 percent moisture content can be burned without any pre-drying. The company says, of the 15 units in operation, under construction, or on order in the U.S. today, 14 burn wood waste, the remaining unit burns olive pits. All units incorporate energy recovery systems, either in the form of water tube or fire tube boilers, or use the hot gas directly in drying applications. The fluidized bed operates at 650 - 980°C, with exit gas temperatures up to 1200°C. The largest unit currently in operation is six meters in diameter, produces 25,000 kgs process steam per hour at 11 kg/cm, and has been operating successfully since late 1975. If the system replaces oil or natural gas, the capital cost is recovered in 18 to 24 months from fuel savings. Other waste materials successfully combusted include date pits, corn cobs, rice hulls, garbage, nut shells and paper mill sludges. End-users include lumber mills, pulp and paper industries, and agricultural product processors. WRITE: Erik Pedersen, Energy, Inc., Dept. CN, P. O. Box 736, Idaho Falls, Idaho 83401 U.S.A.

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- 3559 SOLID FUEL BURNERS -- This company has designed and produced a wood waste conversion system specifically for lumber and plywood systems. The solid fuel burner's "under feed" feature permits use of all wood waste, particularly green bark, since the burner is less sensitive to non-uniform moisture content or density. Fuel preparation is kept to a minimum as one simple hogging operation is sufficient. An additional important feature is that start-up does not require auxiliary fuel. Special safety features eliminate problems of turn-down ratios and prevent any possibility of temperatures exceeding maximum safe levels in drying units. Maintenance is said to be minimal and easily performed and the system is designed for easy, low-cost installation. WRITE: Peter M. Cumming, Irvington-Moore, Dept. CN, P. O. Box 40666, Jacksonville, Florida 32203 U.S.A.

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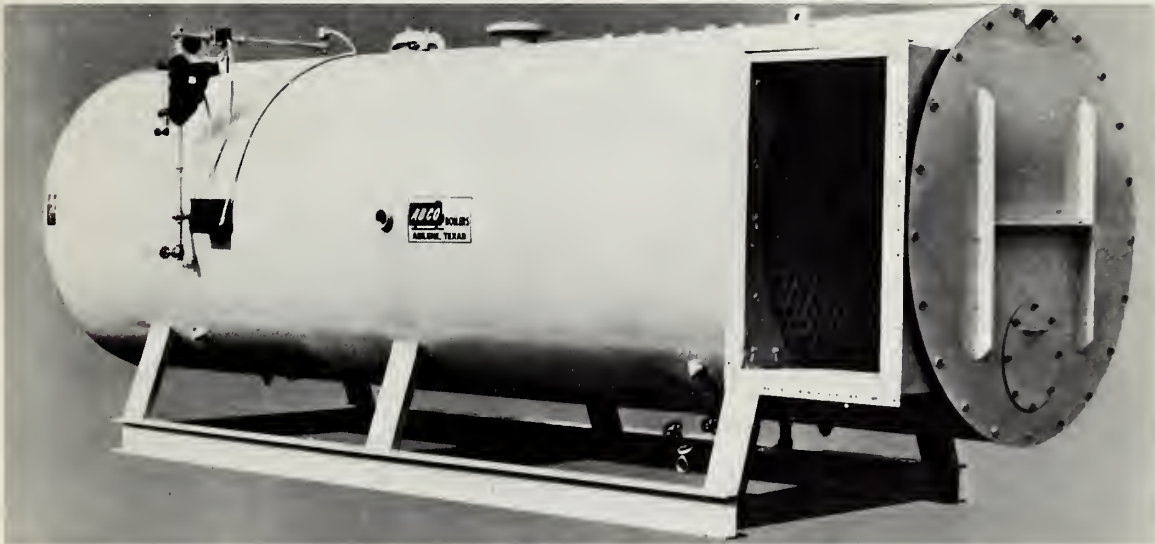


- 3443 HOT WATER HEAT RECLAIMER -- The Reclaimed Heat Water Heater allows for conversion of a regular water heater to a supplemental appliance with substantial savings in fuel costs for water heating. The unit utilizes the hot air discharge from a low temperature refrigeration condensing unit for heating water. Capacity, depending on refrigeration condensing unit, is approximately 35,000 to 150,000 BTUH. The temperature control of the regular water heater should be set so it will only turn on when the demand for hot water exceeds the Reclaimers capacity. In many applications, the Reclaimed Heat Water Heater will supply all water heating energy required and electric or gas elements may be turned off. End-users include office buildings, supermarkets and food storage warehouses with refrigeration equipment. Price range is \$200 (up). WRITE: Grant M. Brown, Engineered Supermarket Products, Inc., Dept. CN, 2190 Coffee Road, Lithonia, Georgia 30058 U.S.A.

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- 3443 HEAT RE-CLAIM SYSTEM -- The "Heat Grabber" substantially reduces the cost of heating water and improves the operating efficiency and life of a central air conditioning or refrigeration system by utilizing the waste heat. The system consists of a hi-efficiency heat exchanger, magnetic drive water circulating pump, and electronic on-off switches. All components are pre-wired and assembled on a 22-gauge steel wall mount plate and readily accessible for service and repair. The cover is made of 26-gauge steel. The "Heat Grabber" comes in sizes from 9,000 BTUH for home use to 300,000 BTUH suitable for commercial or industrial use and is easily mounted on the wall near the hot water tank or compressor. Distributors desired. Cost is \$185 (up). Potential end-users include homes, apartments, commercial buildings, hospitals, industries, etc. WRITE: Richard J. Robinson, Lynn-Aire Products, Inc., Dept. CN, 196R Sams Street, Decatur, Georgia 30030 U.S.A.

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- 3433 WASTE HEAT RECOVERY BOILER -- Designed to recover heat that would otherwise be wasted to the atmosphere from heat producing processes in industry, this line of boilers recovers this heat and produces steam or hot water or heats thermal fluid. A complete range of sizes to 32,000 scfm and 20 atmospheres is available pre-engineered for industry use. Special sizes and designs are available. Agents and distributors being solicited. WRITE: Doyle J. Nash, Abco Industries, Inc., Dept. CN, P.O. Box 268, Abilene, Texas 79604 U.S.A.

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No responsibility can be assumed by the U.S. Government or its representatives for any transaction with any person or firm mentioned herein or for the accuracy or reliability of the product/service descriptions which are supplied by the listed U.S. firms. Listed prices are subject to change without prior notice.

.....MORE NEW ENERGY EFFICIENT PRODUCTS.....

(When the following product descriptions are published in Post Commercial Newsletters, please insert in the product section -"*BUILDING SYSTEMS - Heating, Ventilating, Air Conditioning and Controls (Other than Solar)*".)

HEAT PUMP -- The water-to-air heat pump reduces heating and cooling energy requirements by at least one third, according to the company. This is accomplished by extracting heat from the water through boiling a low pressure, low temperature refrigerant which is compressed into a higher temperature refrigerant before passing through an air coil which gives up its heat to the room or space. By reversing the cycle, cooling is accomplished. WRITE: Floyd Schneeberg, Lear Siegler, Inc., Mammoth Division, Dept. CN, 13120-B County Road 6, Minneapolis, Minnesota 55441 U.S.A.

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ENERGY SAVER THERMOMETER -- The "Energy Saver" is a wall thermometer designed to be placed near the thermostat in any home or office. The principle benefit of the "Energy Saver" is that it can help save from 15 percent to 25 percent in heating and air conditioning costs and most thermostats are off from 2 to 5 degrees, according to this company. This thermometer's exact and instantaneous temperature measurement allows accurate setting of the thermostat which can amount to an 8 percent savings for each degree Celsius, the firm says. WRITE: Jacquelyn Cooper, American Thermometer Company, Dept. CN, 125 Bacon Street, Dayton, Ohio 45402 U.S.A.

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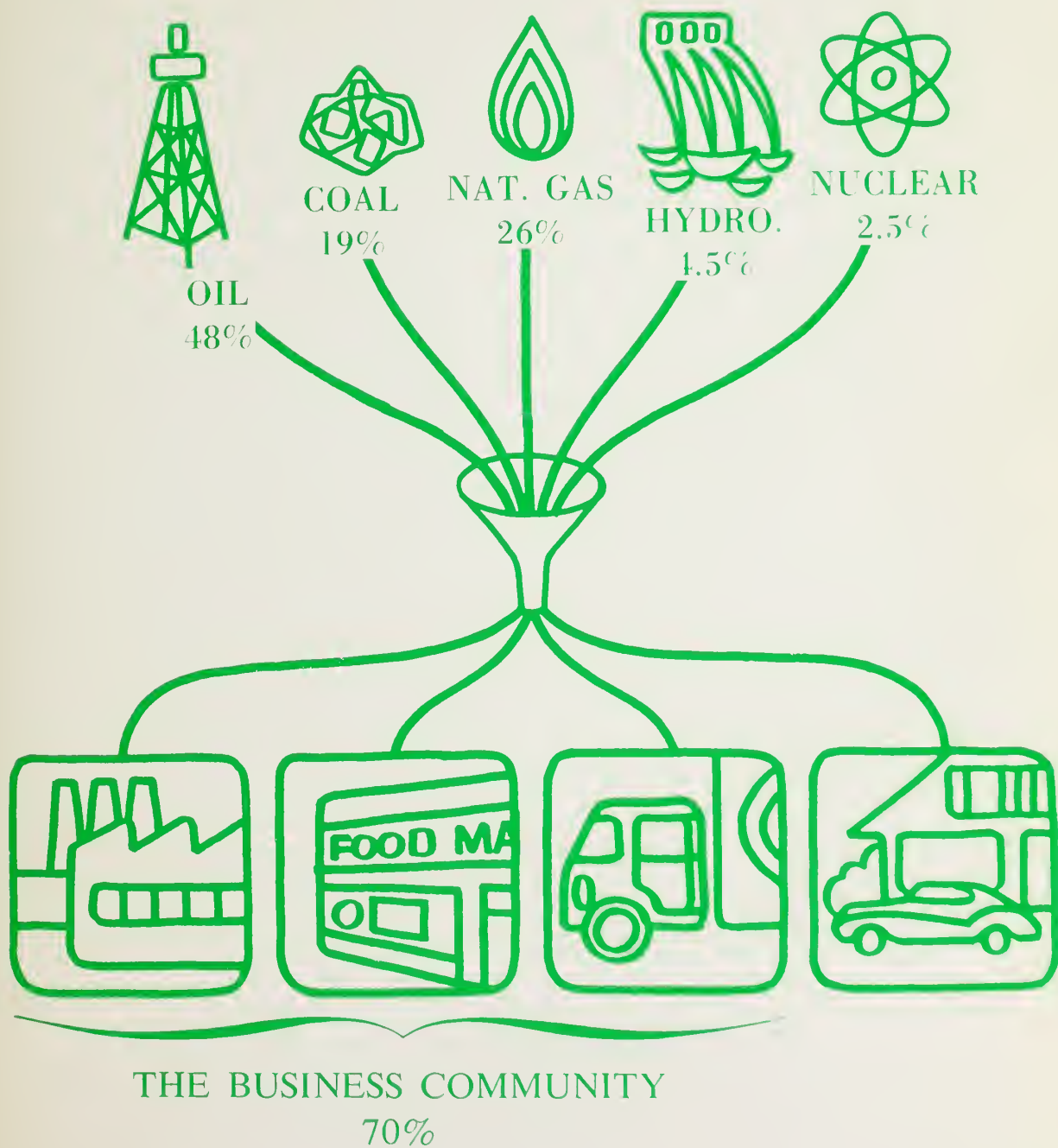
ROOFTOP HEATING/COOLING PRODUCT -- The "Adopt-Aire Modular Packaged System (MPS)" utilizes multiple standardized sections, each with pre-engineered system components. This allows the system designer complete flexibility in engineering the packaged system to meet his exact system performance requirements. WRITE: Floyd Schneeberg, Lear Siegler, Inc., Mammoth Division, Dept. CN, 13120-B County Road 6, Minneapolis, Minnesota 55441 U.S.A.

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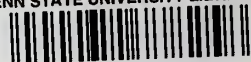
ECONOMIZER RECEIVER-CONTROLLER -- This is a pneumatic receiver-controller which conserves energy on heating and cooling air conditioning systems by combining several control functions into one unit. The company says the outside air is utilized in a most efficient manner for energy optimization of heating and cooling systems. A built-in sensor will signal the outside air dampers to close when supply fan is not operating to reduce building energy losses or damage due to below freezing conditions. Direct sales and distributor inquiries are invited. WRITE: A. W. Kaiser, Powers Regulator, Dept. CN, 3400 Oakton Street, Skokie, Illinois 60076 U.S.A.

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U.S. ENERGY SYSTEM 1976



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